Chapter 3

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Profiling the New Flagship Model

What are the contemporary characteristics, values, and practices of a group of institutions we can identify as Flagship Universities? This chapter provides an initial profile of the model, framed by the tripartite mission of research-intensive universities: teaching and learning, research and knowledge production, and public service.[1]

Leading national universities are now more important for socioeconomic mobility, for producing economic and civic leaders, for knowledge production, and for pushing innovation and societal self-reflection than in any other time in their history. They are constantly expanding their activities in reaction to societal demands, generating new avenues of research and discovery, and expanding their reach into most aspects of modern life. The net result is that the Flagship Universities of today are significantly different from the leading national universities of an earlier era.

The descriptive that follows offers a way to capture and comprehend the modern reincarnation of what is, in essence, an ancient institution transformed. Much of the profile will be familiar; but for some engaged in building anew or reforming their universities, the true breadth of the New Flagship University's purpose and pursuits, and contemporary innovations, may come as a revelation.

To state the obvious, different nations and their universities operate in different environments, reflecting their own national cultures, politics, expectations, and the realities of their socioeconomic world. The purpose here is not to create a single template or a checklist, but an expansive array of characteristics and practices that connects a selective group of universities—an aspirational model. However, many institutions and

ministries may see only a subset as relevant, or only some aspirations as achievable in the near term. Universities that practice the general ideals of the New Flagship will also see that this brief chapter does not include all the activities and roles universities play in their distinct political and economic environment.

Finally, the New Flagship University profiled is not, and could never be, a wholesale repudiation of rankings and global metrics, or of the desire for a global presence. The model is compatible with the World Class University (WCU) focus on research productivity but aims much higher to help articulate a larger purpose. And national and regional relevance and international engagement are mutually compatible goals—indeed the markers of the best universities.

Noting these caveats and qualifications, there are a few key universal conditions that allow the New Flagship University, whatever its manifestation, to exist and mature:

Mission differentiation—National systems of higher education require mission differentiation among their networks of postsecondary institutions. There can be only a limited number of research-intensive universities, some of which might be Flagship universities. Under this rubric, Flagship universities are different from most other major universities in the nation in that they are:

- Highly selective in admissions, yet also broadly accessible—At the undergraduate and graduate levels, admissions criteria need to include objectives calculated to assess the probability of a prospective student's academic success as well as their engagement and potential contribution to a university's larger purpose.
- Faculty teaching, research, and public service responsibilities—Faculty have roughly equal responsibilities for teaching, research, and public service, broadly defined duties, and clearly stated objectives, course workload requirements, and a process of evaluation that also reflects the larger purpose of the university.

A comprehensive array of academic programs—Flagship universities provide or aspire to offer degree programs across the disciplines, including professional fields such as engineering, law, medicine, and teacher training. This does not exclude campuses that are heavily or entirely focused on science and engineering; but institutions without a broad array of disciplines, including the social sciences and humanities, have a more limited ability to, for example, support interdisciplinary research or to meet regional and national socioeconomic needs.

A sufficient "academic core"—Universities that exude the values of the Flagship model can do so only if they have sufficient funding and a baseline of core characteristics. This includes manageable student-to-faculty ratios, a significant population of permanent faculty with doctoral degrees, sufficient numbers of master's and in particular doctoral students, and evidence of sufficient graduation rates and research productivity.

The Center for Higher Education Transformation (CHET), based in Cape Town, first outlined the Academic Core concept (Cloete et al. 2011; Bunting et al. 2013). CHET's baseline criteria focused on the developmental needs of African universities; but they provide a useful framework for all universities that are early in the stages of maturation.[2] In the following, I adopt criteria from CHET, with some additions:

- *Proportion of academic staff with doctoral degrees*—More than half of the faculty with teaching responsibilities should be full-time permanent faculty (positions with identified funding and a long-term contract of some form); of those, at least 40 percent of the permanent academic staff should have doctoral degrees, and at least 25 percent of the permanent faculty defined as full-time should be in the senior ranks, defined as a full or associate rank or equivalent.
- *Academic staff-to-student ratios*—Counting undergraduate and graduate students, the ratio should not exceed 25 to 1, with a preferable target of about 16 to 1.
- *Postgraduate enrollments*—Research-intensive universities require a healthy balance of postgraduate students to undergraduate students, with a floor of at least 20 percent of students in master's and doctoral programs, and a preferred ratio of approximately 30 percent or more.
- *Research funding per academic*—Research requires government and institutional funding and "third-stream" external sources such as industry and donors; Flagship institutions seek diverse funding sources for faculty-directed research activity.
- *Balanced Enrollment Portfolios*—Although the historical purpose of an institution and the needs of the society it serves may vary, generally a goal is to have 30 to 50 percent of students in science, technology, engineering, and math (STEM) fields.

These are baseline requirements for a Flagship. The Academic Core concept has particular relevance for universities in developing economies which often have a low number of faculty with doctoral degrees with adequate training in research methodologies, or experience with

mentoring students, and where faculty salary levels often do not afford what would be considered a middle-class lifestyle.

These are challenges found in many part of the world.[3] The important point is that there is a healthy balance in the various ratios of first-degree and graduate students, permanent faculty, and a general assessment of productivity in graduates and research output.

Institutionally driven quality assurance—While ministries of education can influence the quality of university academic programs and activities, ultimately, top-tier institutions require sufficient independence to develop internal cultures of quality and excellence. This must include merit-based academic personnel policies. If there is any one major theme that determines what are the most productive universities, it is the quality of the faculty. Universities need to have high expectations regarding their talents, responsibilities, and performance, driven by a process of regular of peer review—an important topic discussed later in this chapter.

An ancillary observation: government policy regimes and induced efforts to improve the quality and performance of all or a select group of national universities reflect doubt about the ability of their universities to become top, globally competitive institutions, and often with good reason; but ministries should view such government requirements and often one-size-fits-all policies related to academic advancement as simply an initial stage in the goal of achieving high-performing Flagship universities, with the next and more important stage focused on sufficient autonomy to support a culture of campus-based institutional self-improvement.

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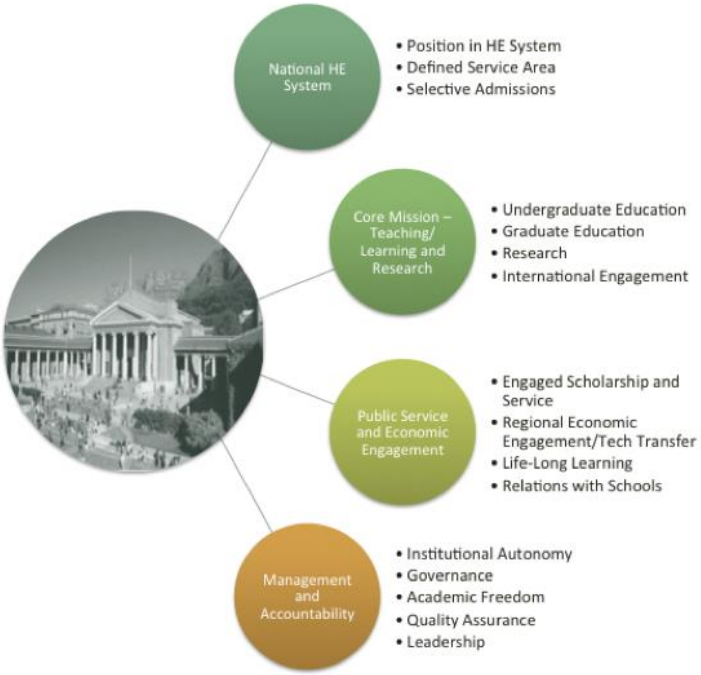
The following New Flagship University profile is organized in four categories or realms of policies and practices, summarized in figure 3.1. Each relates to the institution's external responsibilities and internal operations. Within the context of a larger national higher education system, the idea is that Flagship institutions have a set of goals, shared good practices, logics, and the resources to pursue them. Generally, the sequence is from the larger external context, to the mission of the institutions and goals, to the management structure to make it happen. Put another way, my effort here simply attempts to help create coherency, and to provide some guides and examples, for what many universities are already doing.

Figure 3.1 Flagship University Realms of Policies and Practices.



At the same time, it is important to note that universities are complex organizations that purposefully pursue mutually supportive activities that do not lend themselves easily to separate categories—in a vibrant university, teaching, research, and public service are symbiotic activities, built on a model of institutional revenue sharing and mutual support. Hence, there is some redundancy in this profile.

Profile I: Flagship Universities and National Higher Education Systems

1. Position within a Larger National Higher Education

As noted previously, the idea of the New Flagship University assumes that national higher education systems require mission differentiation among

an often growing number of tertiary institutions. Most nation-states have come to realize that it is neither cost-effective nor possible to develop high-quality higher education systems in which all universities have the same mission and programs. Within a larger, hopefully coherent network of public and private tertiary institutions, it is in fact vital that there exists a subgroup of leading national universities that can help nations most effectively pursue economic development, improve socioeconomic mobility, provide measures of academic quality and support for other educational institutions, and produce political and economic leaders and good citizens. Hence, the actual number of "Flagship" universities in a nation may vary, determined in part by geography and population density, socioeconomic needs, and financial resources.

2. Defined Service Area

Most public universities have a sense of their responsibilities in regard to student admissions by some defined geographic area, with a caveat related to international students. But they often have a vague understanding of their role in economic development and public service. Greater and overt definition of a distinct "service area"—without exclusion of larger regional and international activities—is an important framework for directing or encouraging activities of universities and for evaluating their effectiveness.

3. Selective Admissions

Flagship universities draw most of their students from a national and regional pool of talented students. But this should not be to the exclusion of drawing talent from a continental and international pool—with different goals at the first-degree, graduate, and professional levels. At the first-degree level, admission standards are often regulated by national policies focused on a single national test. Flagship universities need greater flexibility for determining the talent and potential of prospective students and to balance their selection of an entering class with other considerations, including the socioeconomic background of their student body, geographic representation, and exceptions for students with special talents. [See section 13 on the "Four Essential Freedoms" of Flagship universities.]

Profile II: Flagship Core Mission—Teaching/ Learning and Research

1. First-Degree/Undergraduate Education Goals

An essential goal of the New Flagship University is to provide first-degree students with an education that is engaging, that promotes creativity and scholarship, and that results in high-order skills that are useful in the labor market, for entry possibly into graduate education, for good citizenship, and for a fulfilling life.

Pedagogical research has generated the concept of *engaged learning*. This includes two observations: (1) The amount of time and energy students put forth in academic and other pursuits (e.g., community service) is positively correlated to learning and other desired outcomes of undergraduate education; and (2) Institutional policies and practices can influence the level of student engagement. Our universities strive not to produce passive students who meet some minimum floor of knowledge and skills, but innovative and creative students who are ambitious and talented. In shaping the undergraduate experience, universities need to seek the following opportunities and learning outcomes for students:

- Inquiry-based learning
- Experiential learning
- Research engagement
- Interdisciplinary opportunities
- Integrative knowledge
- Collaborative learning and problem solving
- Diversity/global citizenry
- Ethics/responsibilities
- Quantitative literacy
- Communication skills
- Digital literacy

One important concept is that there are many different student experiences and learning processes, shaped by the socioeconomic background of students; their mental health, social support systems, and sense of belonging at a large university; their different intelligences, abilities, and interests

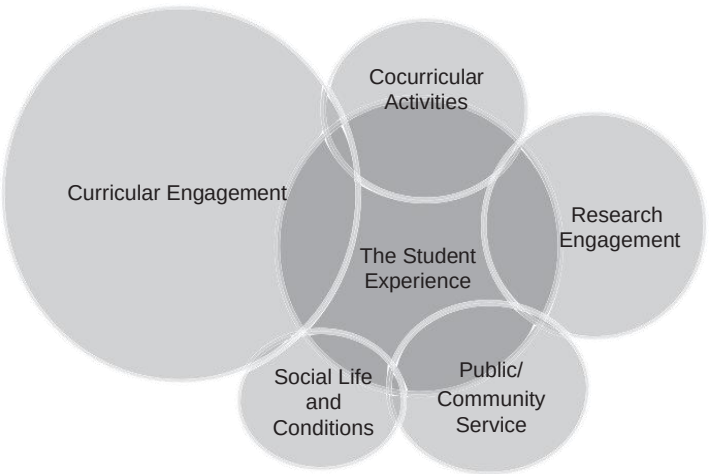
that may change overtime; their field of study; opportunities for engaging in research, and for being mentored.

At the same time, with their wide array of disciplines and faculty, and existing and potential links with local communities, universities must assess and view the student experience holistically, and beyond the narrow confines of the traditional classroom. The Student Experience in the Research University (SERU) Consortium with survey data from top-tier research-intensive universities has explored how these experiences inside and outside of the classroom shape student engagement and learning outcomes.

With the benefit of SERU data, research-intensive universities can conceptualize *Five Spheres of the Undergraduate Student Experience*: curricular engagement (including courses as well as interaction with faculty and graduate students, learning communities etc.), research engagement (faculty directed or mentored, paid and unpaid), public and community service (voluntary or integrated into requirements or credits toward a degree, often termed service learning), cocurricular activities, and their social life and conditions (comprising a wide array of factors, including their living arrangements, financial needs, working full-time or part-time, and sense of belonging).[4]

In the accompanying Figure 3.2, the size of each of these spheres of the student experience is representative, reflecting the relative importance for a generic student. Curricular engagement is at the core of the student experience. It is therefore shown as a larger sphere. However, the student experience is not a singular model, but nuanced and varied, within a university itself, within a disciplinary field of study. The socioeconomic

Figure 3.2 Five Spheres of the Undergraduate Student Experience.



background and interests of students are a variable. At the same time, there are academic cultures, and norms in different nations, that may value certain spheres over others.

Based on this model, the following focuses on three of these spheres—curricular engagement, research engagement, and cocurricular activities. Each provides concepts and policy examples related to supporting the undergraduate experience at a Flagship University.

Curricular Engagement

Research-intensive universities, and Flagships in specific, are increasingly focused on creating a robust environment for faculty and students to be active learners and producers of knowledge. This is in sharp contrast to outmoded, yet still prevalent in many parts of the world, practices of rote teaching and learning—essentially, teaching facts and theories in lecture formats and readings without encouraging or seeking higher-order critical thinking. Flagship universities should be in the business of creating engaged and innovative thinkers. This requires the engagement of faculty in that cause—for some faculty, a relatively new concept. Too often, universities, and their faculty, have been passive in their fundamental role of mentoring and shaping the learning outcomes of undergraduate students.

This is an expansive topic. The following briefly discusses only a few concepts and programs intended to positively shape the curricular experience of students in research-intensive universities—in part, an attempt by these institutions to recalibrate their internal cultures that have increasingly valued research productivity over undergraduate education. This includes the two innovations: Learning Communities and Learning and Professional Development Goals.

Learning Communities

Large research-intensive universities need to seek curricular-focused opportunities for students to find or be invited into small, university-supported communities of students and faculty intended to promote active learning, provide greater curricular coherence, and promote interdisciplinary learning and interaction between students, undergraduate and graduate, and faculty. This can include:

- Linked courses: Students take two connected courses, usually one disciplinary course such as history or biology and one skills course such as writing, speech, or information literacy.
- Learning clusters: Students take three or more connected courses, usually with a common interdisciplinary theme uniting them.

- Freshman interest groups: Similar to learning clusters, but the students share the same major, and they often receive academic advising as part of the learning community.
- Federated learning communities: Similar to a learning cluster, but with an additional seminar course taught by a "Master Learner," a faculty member who enrolls in the other courses and takes them alongside the students. The Master Learner's course draws connections among the other courses.
- Coordinated studies: This model blurs the lines among individual courses. The learning community functions as a single, giant course that the students and faculty members work on full-time for an entire semester or academic year.
- Special University Colleges: Many US universities have what are called "honors" colleges within their universities that provide a specialized number of courses and opportunities for interaction with faculty and fellow honors students. There are also a growing number of "university colleges" that are semi-independent entities of major research universities. They often offer a liberal arts curriculum and multidisciplinary degree programs, have their own faculty and facilities, and have separate admissions practices that are significantly different from the larger university they are part of. They usually include in their curricular design a general education course progression. Amsterdam University College, a joint project of the University of Amsterdam and Vriej University, is an example of a growing movement to create alternative academic programs and environments for undergraduate students (Tinto 2003).

Figure 3.3 provides examples of institutional programs that relate to the concept of learning communities. Some are institution-wide and others are specific to academic programs or student populations such as entering first-degree students.

Learning and Professional Development Goals

Many universities are now engaged in a relatively new collaborative process that involves outline learning and professional development goals for students, and assessing outcomes. At UCLA, a recent initiative outlines campus-wide goals that are influenced by the notion of engaged learning and that are, at first glance, extremely ambitious. In the course of their studies, students are to:

- Demonstrate progressive growth of intellectual and academic competencies, including analytical and critical thinking skills as well as the

Figure 3.3 Case Examples: Honors Programs, Colleges, and Learning Communities.

- **University of Oregon—Departmental Honors Program and Honors Colleges.** Department Honors programs are offered by nearly every department. Each involves extensive course work, a final thesis or research project, and close mentoring by a faculty advisor. For example, The Lundquist College of Business Honors Program provides challenging, stimulating and enriching opportunities for learning, experience and opportunity. Each year via a highly selected admission process, a new learning community with a cohort of thirty-five dedicated students is formed. Working together with a select group of faculty, these students take classes that have been specifically designed for the Honors Program. They engage in experiences available only to Honors students. Oregon also includes the Robert D. Clark Honors College, a highly competitive, small liberal arts college of approximately 800 students admitted in their 2-year at the University of Oregon. The Clark Honors College features small classes and close interaction between students and faculty. It emphasizes interdisciplinary scholarship and independent research in a tight-knit, dynamic community of students and faculty. The College is made up of students from every department and school at the University of Oregon—from architects and musicians to biology and business majors—with classes designed to foster intense and creative exchange among different approaches and viewpoints.
- **Amsterdam University College—A Liberal Arts Program in a Large European University.** University Colleges are a major movement in Europe and elsewhere, usually providing within the venue of a larger comprehensive university a liberal arts program with its own admissions criteria and curriculum. Amsterdam University College was founded in 2009 as a joint venture of the University of Amsterdam and Vriej University. AUC offers a three-year honours degree in three very broad majors in science, social sciences, and humanities. Students can choose between approximately 200 courses across eight fields in the sciences, nine in the social sciences, seven in the humanities, as well as the academic core. As part of AUC's interdisciplinary orientation, students have to pursue 'tracks' in at least two fields within their major. Interdisciplinarity is also emphasized by AUC's themes, which link fields across majors. The college emphasizes a strong academic core, which includes academic writing and basic calculus or statistics, but also more unusual courses such as logic or 'identity and diversity', which are compulsory for students of all majors. Furthermore, students are required to take two to three language courses.
- **University of Wisconsin—Residential Learning Communities.** The campus has some ten Residential Learning Communities that group students around academic and professional fields such as biotechnology, green technologies, multicultural learning, entrepreneurialism, creative arts and women in sciences. For example, the Entrepreneurial Residential Learning

Figure 3.3 Continued

Community (ERLC) has 64 residents living in Sellery Hall. The ERLC's mission is to teach students to put their ideas into action through the entrepreneurial process. Whether a student is undecided, or thinking of majoring in art history, engineering, business, or something else the ERLC can benefit them by teaching the entrepreneurial process. All ERLC residents are asked to enroll in the 3-credit, MHR Course Entrepreneurship and Society which fulfills general education requirements, counts towards the Undergraduate Certificate Program in Entrepreneurship and provides students with access to faculty and community members on a personal basis.

- **Rutgers University—First Year Interest Groups.** First-Year Interest Group Seminars (FIGS) are one-credit seminars taught by upper-class students to aid first-year students in their transition to college while exploring an academic interest area. Every FIGS seminar is graded Pass/No-Credit. FIGS are offered to first-year students in the School of Arts and Sciences, School of Environmental and Biological Sciences, and Rutgers Business School. The course meets for 10 weeks in the Fall semester to provide opportunities to explore an interest area, topic or field of study. Additionally, students in each FIGS practice problem-solving skills, gain insight into the pursuit of academic/career interests, and learn how to tap into the resources of the University. Each FIGS section is limited to 25 students in order to facilitate an intimate educational experience, lively participation in class, trips/tours around campus, and group projects.

acquisition of knowledge, and identify the relevant academic success skills and strategies to facilitate this development.

- Develop an understanding of what a research university is and the purpose and aims of the university's curricula and how common spaces of learning across disciplines can be used to further the student's academic, personal, and professional development.
- Develop basic knowledge of university requirements and pursue opportunities to survey and explore potential majors, minors, and other programs of study that can further their academic, personal, and professional development.
- Develop skills to make decisions regarding career goals, demonstrating awareness of the factors that influence career success and satisfaction.
- Engage in a process of self-reflection to identify and continue to refine personally meaningful reasons and goals for attending the university.
- Engage in a process of identity exploration and development, including exploring personal issues and decisions based on sex/gender identity, sexual orientation, race and ethnicity, socioeconomic status, faith and spirituality, disability, and other factors.

- Demonstrate increasing levels of multicultural competence, specifically acknowledging the importance of successful interaction with people of diverse perspectives and backgrounds through respectful discourse. Students will also develop strategies related to conflict resolution and engaging in difficult dialogues.
- Demonstrate progressive growth of the self-management skills necessary to lead emotionally, physically, and fiscally healthy lives, including the ability to effectively utilize health, financial planning, and other resources.

Many universities have developed similar objectives for their students. In some form, these campus-wide objectives provide a tool for focusing faculty deliberations on the shape and structure of the curriculum at the discipline level and, at the same time, providing students with a sense of what they should get out of their degree program. With a similar set of campus-wide learning outcome goals, academic departments and schools at Berkeley have developed their own set of goals for their first-degree students (see figure 3.4).

Figure 3.4 Case Example: Learning Objectives for Electrical Engineering and Computer Sciences, University of California—Berkeley.

- An ability to apply knowledge of mathematics, science, and engineering.
- An ability to configure, apply test conditions, and evaluate outcomes of experimental systems.
- An ability to design systems, components, or processes that conform to given specifications and cost constraints.
- An ability to work cooperatively, respectfully, creatively, and responsibly as a member of a team.
- An ability to identify, formulate, and solve engineering problems.
- An understanding of the norms of expected behavior in engineering practice and their underlying ethical foundations.
- An ability to communicate effectively by oral, written, and graphical means.
- An awareness of global and societal concerns and their importance in developing engineering solutions.
- An ability to independently acquire and apply required information, and an appreciation of the associated process of lifelong learning.
- A knowledge of contemporary issues.
- An in-depth ability to use a combination of software, instrumentation, and experimental techniques practiced in circuits, physical electronics, communication, networks and systems, hardware, programming, and computer science theory.

At the same time, it is important to note the difficulty of assessing the actual ability of students and the "learning gains" they experience over the course of their university careers. This is because higher-order knowledge and thinking skills are not easily quantifiable—despite the promises of learning assessment tests (Douglass, Thomson, and Zhao 2012).

Universities are in the business of helping student transition from home life to being productive citizens. The curricular structure, along with opportunities for community service, internships in local businesses, and cocurricular activities, are all components in their professional development. Beyond these core components of the student experience, universities are increasingly developing programs and links with local and regional employers and with professional associations. Professional programs such as medicine, business, and engineering programs have long had such connections with employers, including internships and on-going relationships with faculty. Preparation for the job market—local, national, or global—for students studying in the social sciences and humanities is more complex. Yet, in most developed economies, unemployment rates are much lower for students with a bachelor's degree five years or fewer after graduation—with some notable exceptions in the aftermath of the Great Recession. Further, career paths are much more nuanced with the growth of the service sector and, for example, of technology companies that rely on broad skill sets.

At the same time, universities need to recognize significant changes occurring in labor markets, reflecting the growth in the "knowledge economy." Particularly in developed economies, to be prepared and competitive in the labor market, more and more undergraduates are entering graduate education after their first degree. In many cases, this places greater value on their broad skill sets than on their knowledge of a particular field.

Undergraduate Research Engagement

In his famous manifesto on the symbiotic relationship of faculty and students, Wilhelm von Humboldt stated, "The goals of science and scholarship are worked towards most effectively through the synthesis of the teacher's and the students' dispositions. The teacher's mind is more mature but it is also somewhat one-sided in its development and more dispassionate; the student's mind is less able and less committed but it is nonetheless open and responsive to every possibility" (Humboldt, 1825).

Humboldt's vision influenced all universities that sought to be productive generators of new knowledge. But most of the focus was on graduate education, and to a lesser extent the role of undergraduates. In the

United States, a 1998 report titled *Reinventing Undergraduate Education* focused in earnest on the idea of the undergraduate "student as scholar." Building on one of the main concepts of the research university, its main author, Earnest Boyer, emphasized the ideas of "research-based learning" and engaged scholarship, in and outside of the classroom, as an important component of the student experience (Boyer, 1998).

What followed is an elevated sense by many universities globally that undergraduate research engagement in various forms should be promoted. Today this includes credit-bearing courses, funding support, and organizations to help open opportunities for faculty-directed research. It is now widely recognized that opportunities for research experience are important for students to expand their networks of professional relationships, key for deciphering their career goals, generating job opportunities, and making choices about graduate school (Douglass and Zhao 2013). Among the benefits of various forms of undergraduate research experience:

- Skills development, including study design, data collection, computation, analysis of findings, and communication of results.
- Positive attitudes, habits, and intentions, including research ethics, perseverance, and professionalism.
- Clarification or confirmation of career plans including postgraduate studies.
- Enhanced career preparation or preparation for postgraduate studies.
- Greater networking opportunities—exposure to the world of active learning and potential career paths.
- Promoting links with regional economies and public services.

Figure 3.5 offers examples of campus-supported undergraduate research programs.

Cocurricular Activities

Cocurricular refers to student activities, programs, and learning experiences that are supported in some way by a university, but that are voluntary, usually with no course credit, and reflect the students' own interests. They may be connected to or mirror the academic curriculum; some may be supported directly by the university through funding or facilities. This can include a wide range of activities in the form of student clubs and organizations, including but not limited to student government, newspapers, musical groups, reading clubs, fan clubs, environmental awareness associations, sports teams, art shows, debate competitions, and mathematics,

Figure 3.5 Case Examples: Undergraduate Research Programs.

- **University of Michigan—UG Research Opportunity Program**. This program creates research partnerships between first and second year students, and faculty, research scientist, and staff from across the University of Michigan community. Begun in 1989 with 14 student/faculty partnerships, today, approximately 1100 students and over 700 faculty researchers are engaged in research partnerships.
- **MIT—Undergraduate Research Opportunities (UROP).** MIT's program cultivates and supports research partnerships between faculty and undergraduates, with funds provided via faculty and stipends up to $4,880 offered to students to then find faculty mentors. UROP offers the chance to work on cutting edge research—whether established faculty research projects or to pursue student derived and proposed projects.

  An associated project, International Research Opportunities (IROP) is designed for MIT undergraduates who want to conduct mentored research in an international setting. The overseas research opportunities provide many of the same benefits offered through conventional study abroad experiences—including the chance to connect with individuals from diverse cultural backgrounds who share similar intellectual goals. In addition, IROP experiences help students enhance communication and leadership skills and refine collaborative and decision-making skills, while increasing understanding and awareness of ethical issues. IROP projects generally take place over the summer and mirror the traditional campus-based UROP model: qualifying projects must have the approval, mentorship, and guidance of an MIT faculty member.
- **UC Berkeley—Undergraduate Research Apprentice Program and SMART Program.** Undergraduates can apply for semester or year-long opportunities to gain skills working on faculty-led research projects under URAP; more than 1200 students from all majors participated yearly.

  Administered by the Graduate Division, the SMART (Student Mentoring and Research Teams) program enables doctoral students to provide mentored research opportunities for undergraduate students at UC Berkeley and is designed to broaden the professional development of doctoral students and to foster research skills and forge paths to advanced studies for undergraduates. Graduate mentors who work under the guidance of a faculty adviser receive a stipend of $5,000. Doctoral students selected as SMART mentors must complete a one-unit course, Mentoring in Higher Education GSPDP 301. Each undergraduate mentee will be funded in the amount of $3,500 for approximately 200 hours of work.
- **University of Campinas (Unicamp)—Brazil—Undergraduate Research Scholarships.** The office of the Vice President for Research is responsible for selecting the best undergraduate students who wish to engage in scientific research projects under the supervision of faculty members, an activity for which they receive a monthly scholarship. The program,

Figure 3.5 Continued

which exists since 1992, is supported by funds from Unicamp and from the Brazilian federal research agency. In 2010 about 1,000 students were supported through these funds. Coupled to the independent program of the state research agency FAPESP, which provides about 500 other scholarships each year, approximately 10 percent of all undergraduates are engaged in formal supervised research activities in all areas while doing their studies. At least a quarter of these students go on to pursue graduate studies, highlighting the nurturing role played by this program.

robotics, and engineering teams and contests. These activities can be provided virtually. But much more often, they provide an avenue for the personal and real-time interaction of students who are drawn to a particular interest and seek opportunities to meet and work with their peers.

Cocurricular activities may occur with a university's direct or tacit support, or simply may exist largely on the volition and drive of individual students. But in some form, they exist in all universities. Within the American context, most, if not all, of these activities outside the classroom do seem to provide substantial personal benefits to student development—particularly for students who lead a club or organization. They purport to enhance reflective thought, a capacity to apply knowledge, and what has been termed "civic skills" (Verba et al. 1995; Brint 2014).

There is wide variation in how universities, and their students, value these activities. In a nation often termed a society of joiners, and among public universities that are members of the prestigious Association of American Universities, there is on average one official student organization for approximately every 39 students. The Berkeley campus alone has over 1,700 student clubs and organizations. Steven Brint notes that students at engineering schools (those who are promoting online everything) were the most active joiners: Brint found one student organization for every nine students at MIT and Cal Tech (Brint 2014).

There is a need for further research on the different patterns of cocurricular activities in various parts of the world and their influence on student behaviors and development—including their role in developing networks that appear to sometimes influence job opportunities and career paths. There are also questions on whether a high level of engagement in these activities, seemingly removed from the formal curriculum, either benefits or detracts students from their progress toward a degree. Whatever the conclusion, Flagship universities consider the role of these activities as a component of their overall strategy for promoting engaged learning and capable graduates.

Social Life and Conditions

Many other factors influence the student experience, their academic performance and development as individuals. These include, but are not limited to, the nature of their housing arrangements (on-campus versus off-campus private housing), their income (financial aid or not), their work status (part-time or full-time work either out of necessity or cultural habit and family demands), and family responsibilities.

But just as important is the socioeconomic background of students. Flagship universities seeking to enroll students with diverse backgrounds need to better understand their needs and desires to best help them gain the most from their university careers and to help them progress toward degree completion (Douglass 2007).

Universities, and the societies that support them, vary in their perceived need to take into account the practical aspects of a student's socioeconomic background, the cultural biases within and outside the university community, and the realities of their living conditions and mental state. In some form, however, Flagship universities must have a breadth of programs to support students through their university careers, including academic tutoring and remedial instruction, career counseling services, support with student housing and residential life, student orientation, and health care provisions. More generally, campus support services help give coherency to the student experience, help to monitor students' academic progress, and attempt to support a "campus climate" that encourages inclusion, tolerance, and a sense of belonging—important at Flagships that have as part of their mission enrolling a broad spectrum of society.

2. Graduate Education

Flagship universities have special responsibilities for graduate and professional education. Reflecting their role as generators of new knowledge and as leading producers of professional talent in the societies they serve, approximately 30 to 50 percent of all student enrollment at Flagship universities should be in graduate education, and within an array of master's, doctoral, and professional degree programs.

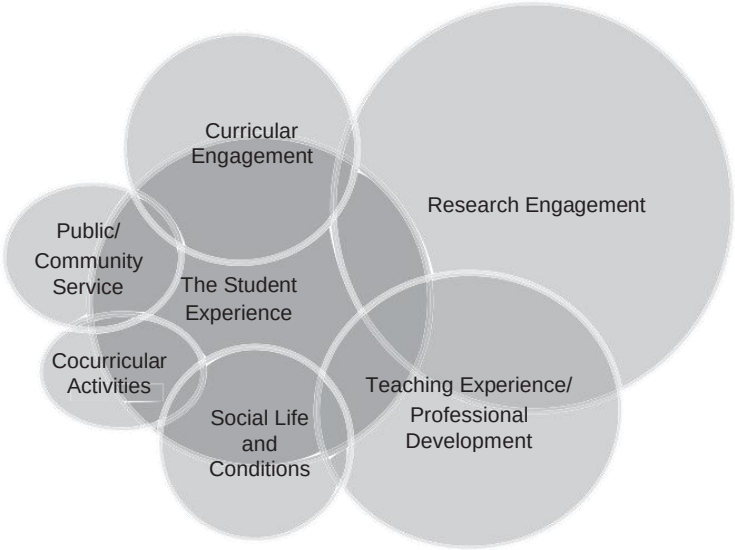
In all nations, graduate education is a critical component in developing and supporting professional expertise required for knowledge-based economies. Increasingly, and as noted previously, undergraduate education is no longer the end of formal education, but the required entry into further formal training and, ultimately, an influential catalyst for economic growth and generating the expertise for alleviating a multitude of

challenging social issues, from human health, to poverty, transportation, social services, and urban planning.

Historically, there has been a great diversity in the approaches to graduate education, in terms of what type of students enter graduate programs (e.g., natives versus international students), how they are educated, what professions they are trained for, and how they find employment. But the elevated role of graduate education has brought an increased focus on the structure and quality of graduate education.

Similar to the graphic representation of the various activities shaping the student experience at the undergraduate level, Figure 3.6 depicts the graduate student experience. Here, six spheres reflect the complexity of graduate education and training: curricular engagement, cocurricular activities, research engagement, teaching experience, and professional development (including employment and internships in business and government), public and community service, and the social life and conditions in which students pursue their degrees—from master's and professional programs, to the doctorate. In this portrayal of the graduate experience, the size of the sphere illustrates the world of a doctoral student that is not only dominated largely by developing research expertise and preparation for the job market, but is also heavily influence by their personal life.

Figure 3.6 Six Spheres of the Graduate Student Experience



Again, universities, and their various disciplines and professional fields, will vary tremendously on what components influence the student experience. For example, cocurricular and public and community service are not always associated with graduate education; yet, degree programs in medicine, social welfare, and law often have significant components related to public service; and STEM fields also can have robust cocurricular activity and forms of social networking.

This is a period of tremendous change in graduate education. Like undergraduate education, graduate education has grown tremendously in the number of programs and enrollment. Throughout much of the developing world, graduate education is a relatively new enterprise. For instance, China now has the largest number of graduate students in the world; yet, only three decades earlier only about 19 doctoral degrees were granted annually in all of China (Ma 2007). In other parts of Asia, in Africa, and in nations attempting a rapid improvement in educational capital, there is an urgent need to expand doctoral programs to, in part, help meet the need for new faculty in their rapidly growing national systems of higher education. Globally, there is a shortage of doctorate recipients. The quality of doctoral programs, and their output in terms of degrees, is a critical role for Flagship universities that can, ultimately, shape the willingness of top talent, both students and faculty, to stay, work, and live, in a particular region of the world.

Similar to reforms in undergraduate education, there is significant global movement to improve the quality of graduate programs (Nerad and Evans 2014). This includes but is not limited to:

- More deliberately structured curricular requirements geared toward the array of professions the program is intended to serve.
- Increased use of English in courses and for master's theses and dissertations in programs attempting to attract and retain international talent, and for preparing future academics and business leaders whose professions are increasingly global in context.
- Clearly stated skills students are to acquire and expectations on their academic performance.
- Articulating the mentorship responsibilities of faculty.
- Coordination with the professions and business to better match training with labor needs.
- Collaboration with the private sector in providing internships as part of graduate training and integrating graduate students into faculty-led university–industry research activity.
- Assessments of the quality of life of graduate students and efforts to support their financial and social needs to make them productive members of the academic community.

- Improved integration of graduate education into the larger purpose and operations of the university.

Universities, in general, and Flagship universities in particular, must view graduate education as a complementary and symbiotic part of their teaching, research, and public service mission, and as a key component in their financial model. While some professional fields, such as business, may be income generators, graduate education, and doctoral programs in particular, are expensive in both time and money.

For doctoral students being trained for academic professions, this means not only the development of research skills, but also training and experience in undergraduate teaching and, when possible, supporting undergraduate engagement in research and public service (see examples in the previous sections). Reflecting their mission to serve the socioeconomic needs of the societies that sustain them, New Flagship Universities must offer professional-oriented master's and doctoral programs that are devoted to fulfilling specific labor and social needs.

3. Research

High levels of research productivity are a significant characteristic of Flagship universities, a responsibility that should be roughly equal to teaching in terms of time and effort of permanent faculty. The types of research output from academic institutions can be outlined in the following modes:

- Discovery—basic or blue-sky research that has no immediate application, commercial or otherwise.
- Integration—synthesis of information across disciplines, across topics within a discipline, or across time.
- Engaged scholarship—rigor and application of disciplinary expertise with results that can be shared and that connects the intellectual assets of the institution, that is, faculty expertise, to public issues, such as community, social, cultural, human, and economic development. (The characteristics of engaged scholarship is more fully discussed in Profile III).
- Teaching and learning—systematic study of teaching and learning processes. It differs from scholarly teaching in that it requires a format that will allow public sharing and the opportunity for application and evaluation by others.

While these are widely recognized distinct modes of academic research, it is important to note changing notions in how research is being undertaken

and defined. A relatively new research culture has emerged, which increasingly seeks transdisciplinary approaches to inquiry and recognize the extensive social distribution of knowledge. Knowledge and data are now so diffuse that many researchers are required to work interactively. This creates both challenges and opportunities for Flagship universities to support research in the various disciplines, and to effectively evaluate its quality and influence.

A key component in the Flagship model is regular peer evaluation of faculty research (a topic for later in this chapter). However, as noted, research activities, and knowledge production, are not simply the realm of faculty. Having graduate and undergraduate students engaged in knowledge production has always been a value in American higher education, an antecedent to the Humboldtian model of the modern university as a learning and research-focused community.

Graduate students are formally engaged normally through the process of coursework and, particularly at the doctorate level, through the dissertation and other forms of research production and dissemination. The structure and quality of doctoral programs is a concern in all major research-intensive universities, with a trend away from the once-common continental Europe model of no or negligible coursework and often minimal mentorship and supervision until the near completion of the doctoral thesis.

Research engagement for first-degree students, as noted previously, has a positive influence on a student's maturation and overall academic and social experience. Further, and to reiterate, research experience is important for expanding the development of professional relationships and networks that can be important for deciphering students' career goals, generating job opportunities, and making choices about graduate school.

International Engagement

All Flagship universities have goals and programs related to various forms of international engagement—from student enrollment and support to curriculum and research activity. The range of this activity and focus, however, will and should vary depending on the geographic location, language, political considerations, national policies such as granting travel visas, and the "brain gain" or "brain circulation" needs of a nation or region. A more expansive outline of the types of international engagements among universities is offered later in this chapter.

While the emphasis in the Flagship model offered here is on regional and national responsibility and relevancy, it is also true that, as noted in a recent study of international research engagements among Latin American nations, "International cooperation is not only a trend, but it is almost

a mandatory practice for any individual, research group or country."[5] The exchange of students and other forms of cross-border experiences is now a common component of research-intensive universities, along with an increasing number of joint degree programs. Yet it is important to note that most universities do not have very clear strategies on international engagement, in part because of the decentralized nature of academic activity and the autonomy of faculty. In the rush toward global engagement, institutions generally need to focus more on the quality of the interaction and how it fits into the institution's mission, and less on the volume of interactions and agreements. As noted previously, international engagement, in its various forms, should be a path for supporting this first-order purpose and mission—not an end unto itself.

Profile III: Flagship Universities and Public Service and Economic Engagement

Engaged Scholarship and Public Service

Flagship universities promote public service in various forms by faculty, students, and staff via formal programs and incentives. This form of university "outreach" is extremely important, providing a significant impact on local and regional communities, opportunities for learning and experimentation, and direct evidence of a New Flagship University's priorities. For example, universities, as one observer has stated, can focus "expertise on improving living conditions in poor areas that can make serious headway against social problems. As civic engagement elevates the quality of university teaching and learning, it produces millions of university graduates with both hands-on competence in their fields and a personal commitment to being agents of social change. And increasing public goodwill for universities can make government and private funders more generous in their financial support" (Hollister 2014).

All leading national universities, and more specifically a subset of their students, faculty, and staff, are engaged in some form of public service. For Flagship universities, the question is the coherency of these efforts, and, just as importantly, the extent they are valued within the institution.

Several factors help explain relatively high levels of engaged scholarship and public services in America's leading public research universities. One is the expectation that students applying to universities at the

undergraduate level have some public service experience, broadly defined. When they enter the universities, they already have interest in student volunteerism and community engagement. A second factor relates to expectations placed on faculty and an academic culture that has long valued community service and engagement with local business and governments—although with differences among the disciplines. This includes incorporating engaged scholarship into faculty reviews of their performance and promotion. And a third factor: campus organizations targeted toward community engagement.

The following provides examples of how Flagship universities can pursue this central part of their mission.

Community Volunteering

Faculty, students, and staff at most universities interact informally as individuals in various forms of community service. But Flagship universities should include formal mechanisms, such as "community service centers," that attempt to identify and link the university community with opportunities for volunteer work. Various forms of civic engagement provide an important path for universities to contribute to local needs—in schools, in hospitals, local social services, charities, and similar community-based activities. It also raises the visibility, and the value, of the universities within their communities.

Service Learning

Beginning in the 1980s, universities in the United States developed the idea of "service learning" as a pedagogical approach, focused on student learning at the undergraduate and graduate levels through activities that benefit the community—a form of experiential education. Properly developed as a component of the curriculum, service learning can be transformational for students by both connecting them with their personal interests and expanding their understanding of their role in society. Today, service learning often includes credit-bearing courses for undergraduates and faculty-directed internships with a public service focus, similar programs for graduate students, and resources and support for faculty to generate their own initiatives.

The University of Michigan, for example, has an endowed center for engagement, focusing on student service learning and partnerships, and producing a refereed journal of scholarly work. Living and learning communities, honors, and other cohort curricular modules are focused on civic learning issues that promote student and faculty civic engagement with the issues of diversity, access, and student success.

Similarly, UCLA established the Center for Community Partnerships—a reflection of the high priority the campus has placed on engagement with its surrounding community in the Los Angeles area. This was not the beginning of UCLA's involvement in the community; the university has been engaged in the Los Angeles area for decades, though not in a systematic way. The goal of the Center is to help strategize UCLA's public service activities.

Reflecting the importance of the service learning movement, over 1,100 colleges and university in the United States are part of the Campus Compact organization that shares best practices and innovations among universities. More recently, an international organization, the Talloires Network, has emerged with similar goals, promoting the concept of the "engaged university" as a core institutional mission—again, a relatively new concept for many universities (Watson et al. 2013; van Schalkwyk 2014). Figure 3.7 provides examples of of "service learning" programs and the following is an outline of objectives for service learning experiences:

- Increase retention, particularly among first-generation college students.
- Increase diversity of local enrollment as a form of outreach.
- Enhance achievement of core learning goals that has an effect on progress to degree.
- Make learning more relevant to students, helping them clarify their talents and interests at an early stage of their academic careers; it often impacts choice of major and eventual career.
- Develop students' social, civic, and leadership skills.
- Strengthen undergraduate research skills and capabilities.
- Encourage students to be productive participants in the community by connecting them to their surroundings.

Faculty-Engaged Policy Research

Flagship universities look for ways to encourage academically relevant work that simultaneously meets campus goals and community needs. In essence, it is a scholarly agenda that integrates community issues as a value for faculty. In this definition, community is broadly defined to include audiences external to the campus that are part of a collaborative process that contributes to the public good. Figure 3.8 provides a comparison of the traditional view of academic scholarship to scholarship that is publicly engaged (based on Furco 1996). Both should have high value within the contemporary Flagship University.

Figure 3.7 Case Examples: Service Learning Programs.

- **University of Minnesota—Service Learning Courses and Scholars Program.** Each semester, the University of Minnesota offers some 50 courses, most for credit, that have service learning components in a wide range of disciplines that enroll approximately 2,000 students. This class-related community involvement enhances students' understanding of course materials. While deepening the learning process in this way, students build a sense of civic responsibility. Support for most service-learning classes is provided by the Community Service-Learning Center which also sponsors a Community Engagement Scholars Program that requires at least 400 hour of community engagement work such as volunteering and a final project, called the Intergrative Community Engagement Project that is noted on student transcripts for graduate school and employment applications.
- **University of Glasgow—Service Learning Program.** Service-learning at the University of Glasgow combines academic coursework with voluntary work in the community, to help students experience policy in practice. It is part of the Public Policy Honours curriculum, and an accredited course for visiting students. Program requirements include one academic course in semester 1: Service in the Community 20 credits, an 8 week placement at 6 hours per week, in a welfare agency in Glasgow, and a 3,000 word reflective journal by the student.
- **Texas A&M—Service Learning Courses and Scholars Program.** Service-Learning Fellows program with up to 6 faculty selected via a competitive review process who receive a $3,000 faculty development award for integrating service-learning into their teaching, research, and public service while becoming recognized campus leaders in service-learning pedagogy and community engagement. The program is a partnership between the Center for Teaching Excellence, Office of the Associate Provost for Undergraduate Studies, and the Department of Student Activities Leadership and Service Center.

The following summarizes some of the benefits that can be derived by a systematic approach to promoting and supporting engaged scholarship by faculty.

- *Bolster the links between research and teaching.* Research indicates that learning is enhanced by real-world experiences that broaden a student's perspective and connect theory with practice. In addition, research that is informed by community participation can have a uniquely meaningful impact that is locally visible.

Figure 3.8 Traditional Views on Academic Scholarship versus the Scholarship of Public Engagement.

Traditional Scholarship	Scholarship of Public Engagement
Breaks new ground in the discipline	Breaks new ground in the discipline and has a direct application to broader public issues
Answers significant questions in the discipline	Answers significant questions in the discipline, which have relevance to public or community issues
Is reviewed and validated by qualified peers in the discipline	Is reviewed and validated by qualified peers in the discipline and members of the community
Is based on a solid theoretical basis	Is based on solid theoretical and practical bases
Applies appropriate investigative methods	Applies appropriate investigative methods
Is disseminated to appropriate audiences	Is disseminated to appropriate audiences
Makes significant advances in knowledge and understanding of the discipline	Makes significant advances in knowledge and understanding of the discipline and public social issues
	Applies the knowledge to address social issues in the local community

- *Improve diversity, student retention, and progress to degree.* A university that more fully integrates community engagement into its research and teaching develops stronger ties to multiple communities and may be better able to attract and engage a diverse student body. In addition, research shows that engaged students remain in school and progress to degree at a greater rate than students who are not engaged.
- *Reenergize faculty around engaged scholarship.* Creating a civic engagement initiative and providing a supportive infrastructure may reenergize faculty teaching and research by providing a fresh perspective on the value their work brings to society.
- *Connect the university to policy makers.* Universities are being questioned about their relevance, lack of transparency, and high costs. Community-based teaching and research is one way to "live" the

public mission and reinforce the important role that the university plays in serving the public good.

- *Build transdisciplinary and interdisciplinary research capacity.* The problems of society are complex, and addressing them requires expertise and research that cross disciplinary lines. These capacities should be supported among faculty and nurtured in students.
- *Building a research community around societies' most challenging policy issues.* Focusing on issues that are of local and national public concern brings the unique strengths of a research university to bear on the most pressing challenges that face the state. This can enhance public knowledge of and appreciation for the university system, thereby making more tangible the return on public investment in higher education.
- *Bringing in new resources and funding.* Both government and private funders are calling for more collaborative approaches to projects as a condition of funding. In addition, local and regional funders who may not normally contribute to other university endeavors may have greater interest in investing in projects with clear public purposes and applications.
- *Build social capital among students, faculty, and communities.* Academic inquiry not only addresses critical research questions but also enhances the ability of students, faculty, and communities to take action and build ongoing relationships that yield multiple benefits. The development of such social capital has been shown by research to strengthen communities, making them more resilient and healthy. New networks of trust and cooperation are likely to emerge and create academic partnerships for scholarly work.

Regional Economic Engagement

Regional economic engagement is an important mission of the modern Flagships—essentially, one avenue for making university-generated basic and applied research and intellectual property relevant. To a significant extent, although not solely, Flagship universities must have teaching and research programs that specifically support local industry and businesses, and that promote entrepreneurialism. The following discuses two major forms of economic engagement: fulfilling labor needs in local markets, and technology transfer.

Labor Needs

While Flagship universities are engaged in the education and training of talent for national, indeed global, labor markets, they must include a

conscious effort to support local economies. This is a dynamic process with two general routes:

- Supporting local labor markets and the needs of businesses and municipal and regional government via public service activities, research engagement usually via faculty-directed projects, and by part-time work. Public service and research engagement activities, in particular, can act as apprenticeship opportunities and often help guide student career interests and shape local economies.
- Education and training for specific professional careers such as engineering, law, and medicine, but just as often via students entering the labor market with high-order skills, such as writing and analytical abilities.

How best to build and guide university efforts to educate first-degree and graduate students for labor markets is a complex challenge. In some fields where institutions have enrollment capacity, the need may be very clear—particularly in professional fields with such shortages as nurses, doctors, or engineers. But labor markets are increasingly diversified and nuanced. In developed economies, the link between a specific university degree in a discipline with employment, particularly at the first-degree level, is often not linear. Graduates of universities often change employers. This is why Flagship universities with a broad range of academic programs, including in the social sciences and humanities, must provide opportunities for students to gain skills and knowledge that make them adaptable in the labor market.

At the same time, universities have or need to develop close associations with major employers. This can be at the programs level. Engineering programs have a long history of close interaction with business and industry, with faculty engaged in applied research, students working in related internships, faculty and postdoctoral students spending significant periods of time in formal private sector employment, and engineers in local businesses having appointments in academic departments. One sees similar patterns of close collaboration among certain science fields—particularly those related to biotechnology.

Another form of collaboration related to local, regional, and national labor needs is the establishment of, and participation of university faculty and officials in, business forums. This is sometimes organized around specific industries, such as energy or education. It can also be simply a regional business forum, seeking avenues for economic development.

Reflecting the emphasis of the Flagship model on evidence-based management, universities need to develop longitudinal data on the

employment of their graduates. They should also conduct surveys on the skills and knowledge desired by, and expectations of, regional employers. More broadly, universities need to regularly assess their overall regional and national economic impact.

Until recently, in many parts of the world ministries sought to make frequently crass assessments of the needs for specific degrees for regional and national labor markets, and to then make budget allocations accordingly—a predilection for central planning that was largely a failure. Flagship universities need to engage in a rigorous process of analysis and assessment of how they can best meet labor needs and the career path, and interests, of their graduates.

Technology Transfer

Flagship universities are actively engaged in a process of technology transfer. There are many complex policy issues involved for universities. Institutions need to protect the independence of academic research, yet also form and leverage university–business partnerships that effectively bring university-generated ideas and technology into the market.

Technology transfer is process of disclosure, patenting, licensing, and enforcement of these patents and licenses. But it is also about consciously promoting economic development and making ethical choices. Among the key policies are the following:

- Goals of technological transfer—While the specter of substantial and steady income from patents and licenses, or university-associated businesses, is often a goal of universities, this is rarely a reality. Costs can be high for getting university inventions into the marketplace, and to then protect them against infringement. Much more importantly, tech transfer is part of a larger effort to promote economic development and interaction of faculty and students with local and regional business and industries—a major route for brain circulation between the public and private sectors. It is important to note that patent and licensing activity and the number of spin-offs is not necessarily the most important evidence of the key role of universities in promoting economic development.
- Technology Transfer Modes—The flow of information between university and business sectors and, perhaps most importantly, the movement of personnel to and from the academy are often cited as the critical factors for promoting a vibrant business climate.[6] The structure of a nation's economy, along with a stable government and legal framework for businesses and universities to operate in, are

also important influences on the ability of universities to strategically increase their role in the economy. University–industry relations consist of a wide variety of activities, including:

- Direct funding of research costs through contracts and grants.
- Formal licensing to industry of university-owned patents and technology.
- Gifts and endowments including endowed chairs designated for colleges, schools, departments, or individuals.
- University–industry exchange programs and student internships.
- Specialized programs designed by the university for continuing education and training of professionals, primarily through university extension programs.
- Participation of industry representatives on campus and university-wide advisory groups.
- Cooperative research projects, some of which include government participation and the use of specialized facilities.
- Use of unique university facilities on a fee-for-service basis.
- Research and development facilities of industries housed on university-property industrial parks.
- Activities of cooperative extension.
- Faculty consulting.
- Research activities of the Agricultural Experiment Station and its affiliated field stations.

- Ownership of intellectual property (IP)—Policies are generally set at the national and institutional level. Increasingly, national governments are allowing university researchers to share in the ownership of intellectual property and in any resulting income, with the university, and sometimes with the source of research funding—often a government agency. The structure and ratio of ownership may vary, but the driving principle is self-interest by the inventor and the university to get IP into the market, and to facilitate "spin-off" businesses.

The following discusses two key areas related to effective tech-transfer policy: first, setting the rules of engagement, and second, providing support mechanisms to encourage entrepreneurialism an interaction between university researchers and students with the private sector and government entities.

Rules of Engagement

A paramount concern is that universities develop rules of engagement with the private sector and other outside agencies seeking research collaborations

and the development of intellectual property. Many universities do have policies shaped by years of experience in fields such as engineering. But many do not, and close ties with industry in areas such as biotech, energy, and nanotechnology are relatively new. Properly devised, these rules can provide guidance for the academic community and a university to develop ethical relationships with the private sector and government, and criteria for when to decline interactions that are inappropriate.

With a growing role of university-based research and education in economic development, there is a learning curve on how best to manage relationships with private sector, and government, interests. The following provides an example of guiding principles at the University of California for technology transfer:[7]

- Open academic environment—All university research, including research sponsored by industry, is governed by the tradition of the free exchange of ideas and timely dissemination of research results. The university is committed to an open teaching and research environment in which ideas can be exchanged freely among faculty and students in the classroom, in the laboratory, at informal meetings, and elsewhere in the university. Such an environment contributes to the progress of teaching and research in all disciplines. Reasonable steps should be taken to insure that commercial pressures do not impede faculty communication among colleagues or with their students about the progress of their research or their findings. Indicators of possible problems include the disruption of the informal exchange of research findings and products, the lessening of collegiality, and the rise of competitive and adversarial relations among faculty.
- Freedom to publish—Freedom to publish and disseminate results is a major criterion of the appropriateness of any research project. University policy precludes assigning to extramural sources the right to keep or make final decisions about what may be published. A sponsor might seek a delay, however, in order to comment upon and to review publications for disclosure of its proprietary data or for potentially patentable inventions. Such a delay in publication should normally be no more than 60 to 90 days.
- Outside professional activities—Faculty should be encouraged to engage in appropriate outside professional activities. Each year, faculty should submit an annual report on outside professional activities to the department chair. This information is included in the faculty member's record and evaluated in the academic review process. It is the responsibility of each faculty member to assure that such outside activities do not interfere with obligations to the university in

teaching, research, and public service; and that no portion of time due to the university is devoted to private purposes.

- Responsibility to students—Universities need to protect the academic freedom of students, and responsibility for adherence to these principles rests with the faculty. Students who have reasons to believe they are in situations that violate those principles should be able to discuss the issue with a third party, such as the department chair or campus ombudsperson. Students must be able to choose research topics for educational reasons without being overly influenced by the need to advance investigations of direct interest to a particular firm; they must be protected against the premature transmittal of research results; and they must be advised objectively on career choices.
- Patent and licensing policy—Universities recognize the need to encourage the practical application of the results of research for the public benefit and need to balance several objectives in both patenting and licensing intellectual property: (1) facilitating prompt and effective development of useful inventions; (2) preventing the inappropriate use of public funds for private gain; (3) maintaining good relations with industry to make the best use of opportunities for education and research funding; and (4) obtaining appropriate revenues for the university from the licensing of patents. For these purposes, the University Patent Policy provides for: (1) mandatory disclosure to the university of potentially patentable inventions by employees or those who otherwise use facilities or research funds of the university; (2) assignment of patent rights to inventions developed in the course of university employment, or with use of university research facilities, or university funds; (3) sharing of royalties with inventors; and (4) transferring of technology to industry for the public benefit.

  Terms and conditions for licensing agreements should consider the nature of the technology, the stage of development of the invention, the effect on the research endeavor in question, the public benefit, and the marketplace. Agreements are negotiated on a case-by-case basis. If a company needs time to evaluate a research result, an option agreement may be negotiated to allow a limited time for a review for licensing purposes. A university can grant the right of first refusal to the sponsor for an exclusive or nonexclusive license, based on the level of sponsor support. Any license of a patentable invention must at least provide for diligent development by the licenses and, in most cases, for the payment of royalties. Reproduction of copyrightable expressions may be separately licensed. Agreements, options, nonexclusive licenses, and exclusive licenses must not interfere with the principle of open dissemination of research results.

Tech Transfer and Entrepreneurial Support

Most major universities have an office of technology transfer with varying levels of authority and effectiveness, and targeted programs to support entrepreneurialism among faculty and students (see figures 3.9 and 3.10 for examples).

Figure 3.9 Case Examples: Technology Transfer Offices.

- **University of California, Berkeley—Office of Intellectual Property & Industry Research Alliances.** IPIRA was created in 2004 to provide a "one-stop shop" for industry research partners to interact with the campus. IPIRA's mission is to establish and maintain multifaceted relationships with private companies, and thereby enhance the research enterprise of the Berkeley campus. These relationships include sponsored research collaborations, and intellectual property commercialization sometimes referred to as technology transfer. This office reports to the Vice Chancellor for Research and consists of two groups: the Office of Technology Licensing, and the Industry Alliances Office. OTL's primary objectives:
  - Pursue public benefits from UC Berkeley IP including improvements to quality of life and economic development by leveraging the IP rights of UC Berkeley innovations in ways that help catalyze the fast, broad application of those innovations.
  - Establish IP terms of research partnerships by reconciling the IP policies and practices of the University with the IP rights that sponsors want in their research agreements.
  - Provide IP-related guidance, education and feedback channels for the campus community, and also as pertinent to UC Berkeley for the public, industry, government and press.
  - Lead Fiduciary Stewardship of UC Berkeley IP by obtaining fair compensation from companies for access to IP rights, and prudently managing the campus's financial costs in securing IP rights.
- **ETH Zurich—Industry Relations.** The ETH Industry Relations team provides a gateway for industry and matches interested companies with research skills available at ETH Zurich and focused on creating and strengthening mutually beneficial relationships between ETH Zurich and corporations worldwide. This includes arranging meetings between companies and ETH Zurich research groups and organize workshops and laboratory visits and supporting ETH Zurich "Competence Centres" in Energy Science, Education, Materials and Proccesses, Integrative Risk Management, and World Food Systems, and with other institutes and national industry associations Across various platforms and initiatives, ETH Zurich and the ETH Zurich Foundation invite partners from industry to support and sponsor visionary projects, talented students and young entrepreneurs.

Figure 3.9 Continued

- **University of North Carolina—Office of Technology Development.** The University of North Carolina at Chapel Hill's Office of Technology Development is charged with facilitating the process of connecting the fruits of University research to the companies best equipped to bring them to the public, and in doing so, to tap into new sources of income to encourage innovators and help support additional research. the University holds public access and societal benefit to be the primary goals of technology transfer and recognizes that the patenting, licensing, and publication of its health-related innovations present opportunities to increase their global accessibility and improve the condition of human life. OTD evaluates the innovation for its commercial potential; takes steps to obtain appropriate protection for the intellectual property represented by the innovation; identifies strong prospects for commercial partnership; and negotiates an appropriate licensing agreement.

Figure 3.10 Case Examples: Entrepreneurial Support Programs.

- **University of California, Berkeley—Student Entrepreneurial Support Programs.** Berkeley's Center for Entrepreneurship and Technology (CET) includes the Berkeley Method of Entrepreneurship claims a unique pedagogy for undergraduates offered in three interconnected layers of theory, entrepreneurial mindset, and new venture networks. A seminal aspect of the BMoE is the use of a game-based learning approach to develop the entrepreneurial mindset and social behaviors needed to develop successful new ventures. The curriculum embeds games and exercises within an experiential and competition-based journey of venture creation. CET's courses leverage on the BMoE and incorporate fundamentals in entrepreneurship, leadership, and product management, combined with the latest trends in cutting-edge technology such as mobile, web 2.0, and big data, turning simple group exercises into interesting projects that often result in real world companies.

  Another Berkeley program, Skydeck, is an engineering and MBA-focused incubator to create new digital technology focused businesses Skydeck, is a joint program of the Hass School of Business, the School of Engineering, various research instittutions, and with Berkeley's affiliated Lawrence Berkeley National Lab. The focus is to promote new start-ups, some student directed and driven, and to keep more of them in and around the city of Berkeley. One program is focused on supporting student start-up ideas via a dedicated team of Haas MBA students who offer direct support to startup, helping to generate financial modeling, marketing strategies, impact analysis, customer relations, project management, sustainable business development.

Figure 3.10 Continued

- **University of Washington—Venture Capital.** The Commercialization Gap Fund is a partnership between UW's Center for Commercialization and the Washington Research Foundation to help promising innovations reach the level of development at which they can attract seed stage investment.
- **ETH Zurich—ETH Innovation und Entrepreneurship Lab.** The programmes and services offered by the ieLab for young entrepreneurs and researchers are designed to help make the results of scientific research carried out at ETH Zurich available to business and society more quickly and to fully exploit their commercial value. This includes:
  - Individual coaching by successful serial entrepreneurs.
  - Intensive networking to establish links with experienced business figures.
  - Support for forging partnerships and alliances with industry at an early stage
  - Help with finding out about the wide range of funding programmes available for young entrepreneurs in Switzerland.
  - "Matchmaking" through contacts with trainees, postdocs and students at ETH Zurich.
  - Access to all the services offered by ETH transfer, e.g., legal matters, contracts, patents.
  - Help with finding follow-up financing for setting up a business.
  - Office space in an open-plan environment, including IT infrastructure.
  - Specialist workspaces in the Life Science area with BSL-2 laboratories.

The trend is for universities to first set up a centralized office for a campus to connect with faculty, help assess the value of ideas and inventions, help in the process of patenting and licensing, and provide links with venture capital and potential business partners. But large universities with robust research programs in science and technology fields tend to evolve by creating technology transfer staff that work in specific disciplines.

Continuing Education and Extension Programs

A critical component in the strategy to extend university- and research-based knowledge is to offer nonformal educational programs and services within a defined service area. Continuing Education refers to courses offered beyond a university's normal curriculum and to nonregistered students; Extension is a term used in the United States and relates to a wider array of program activities, including public lectures and demonstration projects, field research, and publications intended to bolster local economies or improve water conservation and similar activities.

Dating back to the 1890s, Extension has been an extremely important part of the mission of Flagship universities in the United States, with a focus on agriculture and food, home and family, the environment, and community economic development. The innovation of online courses (often nondegree credit) and certificate programs also significantly expands the potential reach of university programs and engagement with local and global economies.

Continuing Education and Cooperative Extension exists throughout the world; but it is often not organized and financed in a way that places it more centrally into the array of university activities. Figure 3.11 offers case examples of this important activity—a fundamental service to society for Flagships.

Figure 3.11 Case Examples: Continuing Education and Extension Programs.

- **University of Cambridge—Institute of Continuing Education.** Established in 1873, the University of Cambridge's Institute of Continuing Education offers a wide array of career development part-time and short term courses that lead to certificates and diplomas up to the masters level, and including online courses.
- **University of Wisconsin—Extension.** Wisconsin's extension programs date back to 1882. The University of Wisconsin works in partnership with the 26 UW System campuses that includes community college, regional institutions and other public research university campuses, along with 72 Wisconsin counties, three tribal governments, and other public and private organizations to fulfill its public service mission. Through statewide outreach networks, UW-Extension also connects university research to the specific needs and interests of residents and communities, including:
  - Cooperative Extension—Works with individuals, families, farms, business and communities, applying university knowledge and research to address issues in rural, suburban, and urban settings. Locally based Cooperative Extension staff collaborates with University of Wisconsin campus specialists to provide educational programming in Wisconsin's 72 counties and within three tribal nations. The Wisconsin Geological and Natural History Survey and Leadership Wisconsin are part of this division.
  - Continuing Education, Outreach and E-Learning—Provides continuing education services through all 26 UW System campuses, including these leading-edge new online degrees: Bachelor of Science degree in health and wellness, bachelor of science degree in health information management and technology and bachelor of science degree in sustainable management.

Figure 3.11 Continued

- Entrepreneurship and Economic Development—Supports the Broadband & E-Commerce Education Center, Center for Technology Commercialization and the Wisconsin Small Business Development Center, with locations at the University of Wisconsin System four-year institutions.
- Broadcasting and Media Innovations—Responsible for Wisconsin Public Radio and Wisconsin Public Television as well as distance-learning and conferencing technology services.

- **University of Campinas Unicamp—Brazil—Extension and Outreach.** An essential element of Unicamp's pedagogical and social mission, the initiatives aim at bringing the institution closer to the community is the responsibility of the Office of the Vice-President for Extension and Outreach. The office is responsible for receiving and stimulating proposals for university extension activities and implementing these with the joint efforts of technical, administrative and operational staff using the institution's own funds or funds obtained from partnerships with other teaching institutions, public bodies, non-governmental organizations or public or private companies. Initiatives have focused popular culture; the history and memory of social movements; restoration of citizenship to street dwellers and indigenous people; social inclusion of individuals with special physical needs; socio-environmental education; sustainable agriculture; socially responsible economics; and the appreciation of culture as a tool for promoting health and well-being.
- **University of Cape Town—Health and Welfare Outreach.** The Students Health and Welfare Centres Organisation, is a student-run, non-profit community outreach organisation based at UCT. Its mission is to improve the quality of life of individuals in the developing communities in the Cape metropolitan area. It is divided into two main service sectors: Health and Education.
  - Health relies on volunteer doctors, medical and allied health science students in all years of study to deliver primary health care in under-resourced communities. It co-ordinates six clinics either from permanent health facilities or from SHAWCO Health's three, fully equipped mobile clinics. These clinics often serve as the only port-of-call for community members who work during the day, or who cannot make the trip to the neighboring day hospital.
  - Education has over 10 student projects running in four community centres, Khayelitsha, Kensington, Manenberg and Nyanga, schools and children's homes. Volunteers are transported to and from the centers where they engage with learners with structured curriculum. Junior projects focus on literacy and numeracy whereas intermediate and senior projects focus on English, Maths, Physical Science and Life Skills.

While fully online courses leading to a degree or certificate may have some limitations as a curricular tool for enrolled undergraduate and graduate students at a university, they have perhaps the most potential impact as Extension programs. Many leading national universities are expanding their efforts in this area, often using virtual platforms provided by commercial and nonprofit enterprises such as Coursera and Udacity. Figure 3.12 outlines online course definitions developed by The Sloan Consortium—a think tank that studies online education.

Some universities have also provided online access to course materials gleaned from their own curriculum and for use by other institutions and by individuals—another example of the public services activities of universities.

Figure 3.12 Definition of Traditional, Hybrid, and Online Courses.

Proportion of Content Delivered Online	Type of Course	Description
0%	Traditional	Course where no online technology is used—content is delivered in writing or orally
1–29%	Web Facilitated	Course that uses web-based technology to facilitate what is essentially a face-to-face course. May use a course management system (CMS) or web pages to post the syllabus and assignments
30–79%	Blended/Hybrid	Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has a reduced number of face-to-face meetings.
80–100%	Fully Online/ MOOCS	A course where most or all of the content is delivered online. Typically have no face-to-face meetings

Relations with Schools

Flagship universities can play a large role in helping to influence and support schools in a university's service area. This includes the following:

- *Shaping curriculum standards*—Through its admissions criteria, for example, required courses, or creating or participating in national/regional curricular standards, or special courses in subjects such as math and composition via Cooperative Extension, Flagship universities can and should have a significant influence on school development—particularly at the secondary level.
- *Teacher training*—All Flagship universities should operate teaching training programs that are selective in admissions. They need not be large, but should be viewed as setting standards in teaching education. Historically, many Flagship universities have also established "Laboratory Schools" owned or jointly owned and operated by the university, creating a school that can employ innovative curricular ideas and unique training opportunities that should also reflect socioeconomic realities of the societies they serve.
- *School principal education*—As part of their critical role in supporting local schools and the path to a postsecondary education, many Flagship universities have distinct graduate programs for current and future heads of schools, often with a focus on secondary schools.
- *School and student outreach*—Faculty, staff, and students should provide opportunities for students from designated service-area schools to visit and be introduced to what it means to be a tertiary student via formal programs.

Relations with Other Postsecondary HEIs

The Flagship model assumes formal and informal forms of coordination and mutual support with other major tertiary institutions. Admittedly, this runs counter to the political culture of many major research universities where national norms tend to view each institution as an island, seemingly disconnected from the operation and welfare of what are sometimes viewed as competitors. Among the forms of institutional coordination:

- *Regional and national course coordination and articulation*.—In some instances, Flagship universities may develop programs at the first-degree and professional level jointly with other usually nearby institutions. See figure 3.8 for examples.

- *Transfer programs*—Course articulation can also lead to formal programs between institutions in which students matriculate at a designated stage at one institution to the New Flagship University. Beginning as early as 1907, California led the United States in the development of a state-wide effort at course articulation for the purpose of promoting what are today known as community colleges. Community colleges were to provide vocational training and adult education courses. But they also provided the first two years of a liberal arts program leading to the Associate of Arts degree, replicating the first two years of a bachelor's program at the University of California. Then as now, students with the AA degree can then matriculate to any UC campus at the third-year level to complete a four-year bachelor's program.

  Today, approximately 28 percent of all undergraduates at the University of California are transfer students; nationally in the United States, some 35 percent of all students who earn a bachelor's degree attend and gain course credits in more than one institution on the path to that degree. There are other examples of a nascent attempt in other parts of the world at promoting national and regional course articulation and pathways for students who transfer (see figure 3.13).

Figure 3.13 Case Examples: Regional and National Higher Education Coordination.

- **KU Leuven Association Belgium.** Founded in 2002, the KU Leuven Association is an open and dynamic network linking eleven university and colleges across Flanders and Brussels with the KU Leuven, but with a focus on the institutions in the Leuven regional area, and with the purpose of forming cluster of centres of excellence in areas such as teaching, research and the arts. Its members strengthen each other by exchanging expertise and pooling resources, which enables them to improve the quality of both education and research. One example of institutional coordination: the Association's common digital learning platform, Toledo, creates several possibilities for multi-campus education. Toledo offers a number of online teaching facilities to students and lecturers: making course materials available, communicating with lecturers and fellow students, posting tests and assignments, creating a wiki or blog, offering tools for assessment. Because all Association members use Toledo, it is easy for lecturers to teach the same course at different institutions or to interact with lecturers on other locations, and for students to enroll in courses at partner institutions.

Figure 3.13 Continued

- **Intersegmental Public Higher Education Course Articulation in California.** The ten campus University of California system and the twenty-four campus California State University system work with the 110 public California Community Colleges to maintain "intersegmental" course articulation agreements. There are two kinds of articulation agreements administered:
  - Intersegmental General Education Transfer Curriculum IGETC articulation identifies courses that may fulfill lower division general education requirements at UC or CSU campuses.
  - Campus-specific articulation determines whether CCC coursework will satisfy major, breadth or other requirements at each UC campus. Each campus manages the following:
    - Campus-specific general education/breadth agreements
    - Course-to-course agreements by department
    - Lower division major preparation agreements

- *Joint community outreach efforts*—Flagship universities should lead and collaborate with other tertiary institutions in efforts to expand access to higher education for lower-income and other disadvantaged groups at the secondary and lower levels of education. This can include providing secondary students information and personal contacts on what it will take to enter a higher education institution and not just the New Flagship University, and programs at the Flagship and other postsecondary institutions in which targeted students come to a campus, are exposed to its environment, and gain a sense that they can aspire to a university degree within a supportive academic community.

Profile IV: Flagship Universities—the Building Blocks for Management, Accountability, and Quality

Institutional Autonomy

The organization and management of national higher education systems are changing globally. Most are moving toward greater levels of autonomy while demanding expanding accountability requirements. In 2003, for example, Japan passed the National University Corporation Act that made all national universities legally autonomous with greater powers delegated

to the president and a governing board. Two years later, Singapore passed similar legislation giving three universities autonomous status as nonprofit private corporations (Felden 2008). France has pursued a significant reformulation of the authority of their national universities, granting new rights for academic leaders to manage university land and finances and the process of faculty advancement.

Yet in much of the world, a dynamic still exists where national universities are still subject to significant operational and financial management dictates from ministries and, at the same time, maintain a decentralized structure of academic decision making characterized by a university rector or president (titles vary) with weak management powers. In many universities, faculty authority remains linked to the historic role of faculty as self-regulating enclaves. They are largely devoid of accountability to the university as a whole; the rector or equivalent position is elected for a relatively short term, sometimes solely by the faculty, and sometimes with voting by students and staff—although usually with faculty vote having a higher weight. The voting process and short-term tenure of the rector can be influenced by intense domestics and campus politics, pitting groups against each other and encouraging wholesale changes in a university's upper management. The new leadership tends to have a lack of interest in prior policy initiatives.

The lack of sufficient management capacity is one of the reasons that many national governments have moved toward greater levels of legal autonomy for their universities. Ministries aim for improved leadership and greater institutional accountability, quality, and productivity. But this is not an easy transition for many universities. They owe their existence and much of their management culture to a dependence on ministerial direction and, often, remain dependent on a civil-service culture that is not performance based. Once granted greater autonomy, universities often lack a clear understanding of the relative roles and authority of rectors and other top-level university managers and faculty, students, and staff. It is uncharted territory that has caused great consternation in many national higher education systems.

Flagship universities need a strong conceptual model of governance to assert their leadership role and shift their focus away from a dependence on ministerial demands. This should include the following three operating principles:

- *Academic autonomy*—Flagships should have "Four Essential Freedoms" focused on the academic operation of an institution[8]:
  - The right to select students—within some general framework of national and sometimes regional policy.
  - The right to determine what to teach.

- The right to determine how it will be taught.
- And the right to determine who will teach.

- *Fiduciary autonomy*—Flagship universities require a sufficient level of independence for the effective and efficient use of resources. This should include significant budget authority: for example, the ability at the university level to shift some or all allocated funds and resources, such as land and buildings, to identified needs, and to redistribute personnel, including reallocating faculty positions.
- *Public accountability*—Governments that fund and give life via chartering of universities, whether public or private, must monitor and assess institutional performance, preferably assisted by a university governing body with representatives from government and civil society that can hold academic leaders accountable for achieving institutional goals.

At the same time, a high level of institutional autonomy via government provision is not sufficient in itself to support the goals of a Flagship. It must be accompanied by a governing and management structure that allows for decision making with relatively clear lines of authority and rules on shared governance with faculty.

Governance and Management

The level of autonomy provided by governments and their ministries varies tremendously, although it is generally characterized by greater levels of freedom in financial and academic management for university administrators. Governance and management capacity are a significant variable for institutions that, properly structured, allow a university to fully pursue the Flagship model.

Governing Board

Common to all Flagship universities in the United States, and increasingly at major, top-tier research universities throughout the world, is some form of a governing board. Such boards include members from the larger society that the university serves. They are sufficiently autonomous from national ministries, and government in general, to set broad institutional policies and hire and fire the top university administrator.

Depending on its legal authority and the process for selecting members, the board should provide a crucial combination of public accountability and, at the same time, a buffer between the occasional political vacillations

of ministries and other forms of political pressure that may not benefit the university's long-term mission and public purposes.

If properly constituted, governing boards act as conduit and forum for major policy decisions that balance the academic values necessary for the internal life of universities while responding to the external needs and multiple demands of stakeholders. See figure 3.14 for an example of the general principles for a university governing board's operation, developed by the Association of Governing Boards based in the United States.

Figure 3.14 Case Example: Outline of General Principles for a University Governing Board Association of Governing Boards (AGB).

- **The ultimate responsibility for governance of the institution rests in its governing board**. Boards are accountable for the mission and heritage of their institutions and the transcendent values that guide and shape higher education; they are equally accountable to the public and to their institutions' legitimate constituents. The governing board should retain ultimate responsibility and full authority to determine the mission of the institution within the constraints of state policies and with regard for the state's higher education needs in the case of public institutions or multi-campus systems, in consultation with and on the advice of the president, who should consult with the faculty and other constituents.
- **The board should establish effective ways to govern while respecting the culture of decision making in the academy.** By virtue of their special mission and purpose in a pluralistic society, universities have a tradition of both academic freedom and constituent participation—commonly called "shared governance"—that is strikingly different from that of business and more akin to that of other peer-review professions, such as law and medicine. Faculty are accorded significant responsibility for and control of curriculum and pedagogy. This delegation of authority results in continuous innovation. Board members are responsible for being well informed about and for monitoring the quality of educational programs and pedagogy. Defining the respective roles of boards, administrators, and faculty in regard to academic programs and preserving and protecting academic freedom are essential board responsibilities.
- **The board should approve a budget and establish guidelines for resource allocation using a process that reflects strategic priorities.** Budgets are usually developed by the administration, with input from and communication with interested constituents. The board should not, however, delegate the final determination of the overall resources available for strategic investment directed to achieving mission, sustaining core operations, and assuring attainment of priorities. Once the board makes these overarching decisions, it should delegate resource-allocation decisions to the president who may, in turn, delegate them to others.

Figure 3.14 Continued

- **The governing board should manifest a commitment to accountability and transparency and should exemplify the behavior it expects of other participants in the governance process**. From time to time, boards should examine their membership, structure, policies, and performance. Boards and their individual members should engage in periodic evaluations of their effectiveness and commitment to the institution or public system that they serve. In the spirit of transparency and accountability, the board should be prepared to set forth the reasons for its decisions.
- **Governing boards have the ultimate responsibility to appoint and assess the performance of the president**. Indeed, the selection, assessment, and support of the president are the most important exercises of strategic responsibility by the board. The process for selecting a new president should provide for participation of constituents, particularly faculty; however, the decision on appointment should be made by the board. Boards should assess the president's performance on an annual basis for progress toward attainment of goals and objectives, and more comprehensively every several years in consultation with other constituent groups. In assessing the president's performance, boards should bear in mind that board and presidential effectiveness are interdependent.
- **Boards of both public and independent colleges and universities should play an important role in relating their institutions to the communities they serve**. The preceding principles primarily address the internal governance of institutions or multi-campus systems. Governance should also be informed by and relate to external stakeholders. Governing boards can facilitate appropriate and reciprocal influence between the institution and external parties in many ways.

Source: Statement on Board Responsibility for Institutional Governance, AGB, 2010.

Most major universities also have an affiliated "Foundation" or "Development" corporation with a board to solicit donations and gifts, with funds that are managed outside of the legal framework and restrictions of the university itself. This provides a means to generate additional income and fund-targeted projects, like buildings and scholarships, and sometimes operating funds. But this is very different from the larger policy and financial accountability role of an effective governing board that optimally would charter and regulate a university's foundation.

Executive Leadership

In many countries, the role of the president or the equivalent title of rector, vice chancellor, warden, etc., has been extremely weak, largely either a ceremonial position or a temporal, elected position in the university

community with limited authority to manage an institution. Similarly, the extensive, often invasive, authority of ministries and rules and regulations generated by national governments has provided little room for effective institutional management to arise. This is changing in most parts of the world, with formal government policies creating broader authority for university presidents, including greater authority in budget management and administrative authority.

As noted, growing executive authority is a source of significant tension and confusion among faculty. On one extreme, too much authority can, as Michael Shattock states, give rise to a managerial model that can "push academic participation to the periphery" and lead to "a loss of academic vitality and distinctiveness" (Shattock 2013). Yet the other extreme is more common: a lack of organizational capacity to effectively shape university activities and output.

Faculty and Shared Governance

To help navigate the proper balance in authority, universities need to clearly define the role of administrative leaders and faculty in university management under a model of "shared governance." These relative and shared roles are summarized in the following:

- Academic administrators should, generally, have the primary roles in all issues related to budget decisions, and effective management of university operations that support academic activities. They should act as the primary liaison with governing boards, government authorities, and other stakeholders. Executive leaders can also provide a strategic vision for universities and ideas for new initiatives, yet always in a consultative manner with university faculty and other members of the academic community.
- A representative body of the faculty (such as a "faculty senate") should have direct or shared authority regarding all academic activities of a university, including oversight of academic programs and curriculum, shared authority with the university's rector or president over faculty appointments, generation of admissions standards and practices where there is institutional discretion, and consultative rights for major budget decisions related to academic programs.

Most universities have never fully articulated and codified the role of faculty in formal university policies, instead relying sometimes on government laws or more informal modes of behavior and precedent. The University of California, a multicampus system with ten campuses, provides an example

of policies on shared governance that arguably is one reason for its status as one of the great university systems in the world. It includes delegated authority by the university's Board of Regents to its Academic Senate—the representative body of the faculty—in five areas of university management:

- The authority to determine the conditions for admission.
- The authority to establish conditions for degrees and to supervise courses and curricula. The Senate has the responsibility to monitor the quality of the educational programs that students must complete to earn their degrees and to maintain the quality of the components of those programs.
- The authority to determine the membership of the faculty and the process of their advancement. The Senate has a responsibility to monitor the quality of the faculty who teach courses, who develop the educational program, and who conduct research at the University of California. Faculty are evaluated under a uniform set of criteria that are intended to maintain a level of excellence on each UC campus. In order to ensure the quality of the faculty, the Senate also monitors faculty welfare issues that affect recruitment and retention of high-quality faculty.
- The authority to advise on the budget of the campuses. The University empowers the Senate to advocate budget allocations that channel resources into activities that enhance the academic programs of the university.
- The authority to conduct hearings in disciplinary charges against faculty that enforce the Faculty Code of Conduct and other policies of the university related to faculty performance in carrying out the university responsibilities.

Yet, it is also important to note that statements on the relative authority for faculty and administrators are not sufficient unto themselves for effective shared governance. The best universities have an academic community with a strong sense of their shared burden in maintaining and improving the effectiveness and quality of their institutions, and mutual respect among administrators and faculty. In their study of the changing nature of shared governance among Nordic universities, including Helsinki, Copenhagen, Oslo, Lund, and Uppsala, Bjorn Stensaker and Agnete Vabø note that while most universities emphasize leadership and governance capacity, most efforts at improving university management "overlook the cultural and symbolic aspects of governance along the way" (Stensaker and Vabø 2013). It is not simply about rules and regulations regarding management authority. It is also about relationships and a sense of common purpose.[9]

Academic Freedom

Critical to the success of the New Flagship University model is the principle of academic freedom. Many universities have their own definition of this critical organizational concept. Columbia University has the following statement:

> [Columbia provides the right] of faculty to determine the content of what they teach and the manner in which it is taught and the freedom to choose the subjects of their research and publish the results. It also guarantees that they will not be penalized for expressions of opinion or associations in their private or civic capacity.[10]

With concern among major universities regarding the freedom and rights of academics in various parts of the world, in 2013 the Association of American Universities (AAU, representing the leading public and private universities in the United States), the Group of Eight Australia, and the League of European Research Universities issued the "Hefei Statement on the Ten Characteristics of New Research Universities." The statement reads:

> The responsible exercise of academic freedom by faculty to produce and disseminate knowledge through research, teaching and service without undue constraint within a research culture based on open inquiry and the continued testing of current understanding, and which extends beyond the vocational or instrumental, sees beyond immediate needs and seeks to develop the understanding, skills and expertise necessary to fashion the future and help interpret our changing world.[11]

Similar rights should be extended to students, particularly in regard to freedom of expression. For both faculty and students, however, there are restraints in all societies in some form regarding speech—including "hate speech" or varying forms of sedition. The cultural and political environment in which Flagship universities operate cannot be ignored; yet, each should have some formal statement regarding academic freedom.

Quality/Evaluation of Faculty and Academic Programs

The model of the New Flagship University requires sufficient autonomy and academic leadership to develop and sustain an internally derived culture of self-improvement and institutional quality. There are three cornerstones for this effort: (1) a clear outline of expectations for faculty that reflects the values of the Flagship University and the broad range of faculty

responsibilities—often not well thought out or articulated in many universities; (2) a process of hiring faculty *and* a regular review of a faculty members' performance throughout their careers, linked to the policies on their duties; and (3) regular review of academic departments or faculties (often called program review) intended for internal decision making.

The following outlines how a system of regular evaluation of faculty and academic programs can be pursued.

Faculty Appointment and Advancement

How faculty are hired and promoted differs in various parts of the world. Many leading national universities are still mired in a civil-service mentality in which faculty seniority, not actual performance, constrains institutional effectiveness and innovation.

Over time, leading research universities in the United States have developed a process for an initial faculty hire, a period of evaluation of a person's productivity and promise (usually five to six years), and then the status of tenure (with the initial title of Assistant Professor) with regular reviews (every two to three years) of a faculty member's performance in teaching, research and public service—a process of "post tenure" review. Faculty advancement, including pay, is determined by their performance. Failure to gain regular promotions diminishes the standing of that person in the eyes of peers, and places limits on current and future salary. It also can result in greater teaching workload and does not limit a university from firing a faculty member who is a poor performer or for budgetary considerations.

Policies, and procedures related to hiring and promotion are important, but alone do not suffice. In their study of MIT and UC Berkeley, sociologists Jean-Claude Thoenig and Catherine Paradeise note the central role of a campuswide organizational culture that values innovative thinking in the course of a faculty career—not simply the quantity of journal articles or other rudimentary gauges of productivity. At the best universities, they observe, the focus on innovative work in a wide spectrum of faculty activity sets the best institutions apart. "Performance evaluation and especially the quality of a person's research are considered vital not only for that person, but the whole local community."[12]

Other national systems, such as in Australia, provide contracts for full-time faculty, initially short term and, with evidence of academic performance, longer-term contracts that, essentially, provide a similar level of stability and peer review found in tenure systems. In both, the civil-service culture based on years served is absent.

How to evaluate faculty performance and promise within a Flagship University? It is important to recognize considerable variation in the research interests of faculty. Harking back to the previous sections, some pursue traditional forms of research and other "engaged scholarship." Further, faculty teaching, research, and public service interests evolve over time.

Figure 3.15 provides a conceptualization of the primary areas of responsibility and activity for faculty: teaching and mentoring, research and creative work, professional competence and activity, university service (including activities related to academic management at the program, discipline, and campus-wide levels), and public/community service. Like the previous depiction of the experience of undergraduates and graduate students, the size of each sphere is only an example of a faculty member with significant research productivity. Theoretically, the weighting will vary depending on faculty members' interests, abilities, and stage in their academic careers.

The University of California has a history of developing innovative academic personnel policies that have significantly influenced the quality and productivity of the institution. The accompanying Figure 3.16 provides an outline of the posttenure review policies of California's Flagship University.

Figure 3.15 Five Spheres of Faculty Appointment and Promotion.

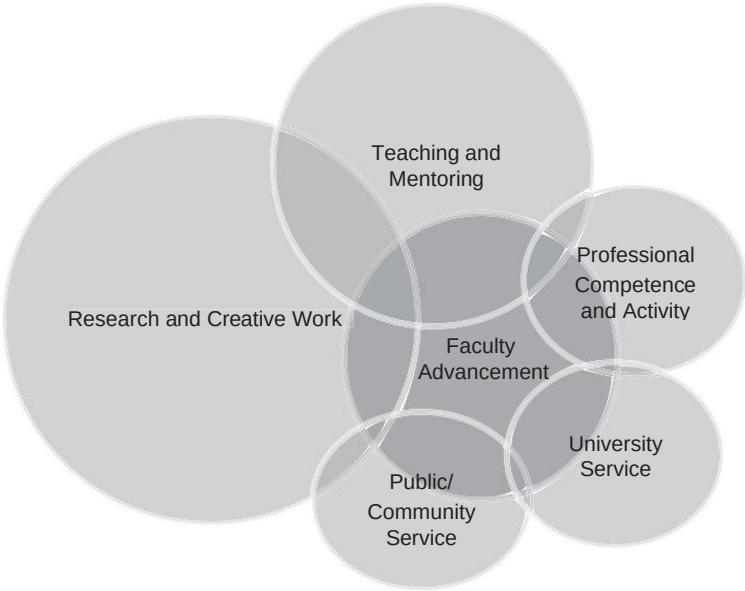


Figure 3.16 Case Example: University of California Process for Faculty Post Tenure Review.

Personnel actions for merit, promotion, and appraisal normally begin in the department. The department chair, in consultation with each candidate, assembles a review file, which, after departmental discussion and voting, is sent to the Dean or other appropriate administrative officer.

In cases of promotions the file goes next to an ad hoc review committee, which is appointed by the Chancellor or designee, from nominations provided by the Senate Committee on Academic Personnel. The majority of the ad hoc membership comes from outside the home department and the membership of this committee is kept confidential.

The ad hoc committee reviews the case and, normally, its recommendation is sent to the Committee on Academic Personnel (CAP). CAP, which is also known as the Budget Committee on some campuses, reviews the complete case, including all recommendations and documentation, and evaluates it in view of campuswide standards. Ad hoc committees are not normally used for appointments to Assistant Professor tenure track positions or for merit increases. CAP normally provides the peer review. A recommendation goes from this committee to the Chancellor or Vice Chancellor for a final decision.

If the Academic Vice Chancellor or designee makes a preliminary assessment in the case of an appointment, reappointment, formal appraisal, non-reappointment, or promotion of an individual in the Professor series, which is contrary to recommendations of the Dean or Provost, the department chair, or the Committee on Academic Personnel, the Academic Vice Chancellor informs that reviewer and asks for further information which might support a contrary decision. In the case of non-reappointment of an Assistant Professor, the candidate may, upon request, seek access to documents in the review file. The department chair shall receive documents provided to the candidate. After additional information is furnished, CAP and the Dean or Provost are given the opportunity to comment on the augmented file before the Chancellor makes the final decision.

Each faculty member understands that performance will be evaluated on campuswide criteria. The following provides the criteria for that review, as stated in the University of California's Academic Personnel Policies.[13]

Teaching and Mentoring

Clearly demonstrated evidence of high-quality in teaching is an essential criterion for appointment, advancement, or promotion that includes documentation of ability and diligence in the teaching role. In judging the effectiveness of a candidate's teaching, peer review should consider points

such as the candidate's command of the subject; continuous growth in the subject field; ability to organize material and to present it with force and logic; capacity to awaken in students an awareness of the relationship of the subject to other fields of knowledge; fostering of student independence and capability to reason; spirit and enthusiasm that vitalize the candidate's learning and teaching; ability to arouse curiosity in beginning students, to encourage high standards, and to stimulate advanced students to creative work; personal attributes as they affect teaching and students; extent and skill of the candidate's participation in the general guidance, mentoring, and advising of students; effectiveness in creating an academic environment that is open and encouraging to all students, including development of particularly effective strategies for the educational advancement of students in various underrepresented groups.

Review should pay due attention to the variety of demands placed on instructors by the types of teaching called for in various disciplines and at various levels, and should judge the total performance of the candidate with proper reference to assigned teaching responsibilities.

Research and Creative Work

Evidence of a productive and creative mind should be sought in the candidate's published research or recognized artistic production in original architectural or engineering designs or the like. Publications in research and other creative accomplishment should be evaluated, not merely enumerated. There should be evidence that the candidate is continuously and effectively engaged in creative activity of high quality and significance. Work in progress should be assessed whenever possible. When published work in joint authorship or other product of joint effort is presented as evidence, it is the responsibility of the department chair to establish as clearly as possible the role of the candidate in the joint effort. It should be recognized that special cases of collaboration occur in the performing arts and that the contribution of a particular collaborator may not be readily discernible by those viewing the finished work.

Professional Competence and Activity

In certain positions in the professional schools and colleges, such as architecture, business administration, dentistry, engineering, law, and medicine, a demonstrated distinction in the special competencies appropriate to the field and its characteristic activities should be recognized as a criterion for appointment or promotion. The candidate's professional activities should be scrutinized for evidence of achievement and leadership in the field and for demonstrated progressiveness in the development or utilization of new approaches and techniques for the solution of

professional problems, including those that specifically address the professional advancement of individuals in underrepresented groups in the candidate's field.

University and Public/Community Service
The faculty plays an important role in the administration of the university and in the formulation of its policies. Recognition should therefore be given to scholars who prove themselves to be able administrators and who participate effectively and imaginatively in faculty government and the formulation of departmental, college, and university policies. Services by members of the faculty to the community, state, and nation, both in their special capacities as scholars and in areas beyond those special capacities when the work done is at a sufficiently high level and of sufficient high quality, should likewise be recognized as evidence for promotion. Faculty service activities related to the improvement of elementary and secondary education represent one example of this kind of service. Similarly, contributions to student welfare through service on student-faculty committees and as advisers to student organizations should be recognized as evidence, as should contributions furthering diversity and equal opportunity within the university through participation in such activities as recruitment, retention, and mentoring of scholars and students.

Beyond this outline of policy on faculty responsibilities and expectations, universities need to set standards related to possible conflicts of interest, Faculty and staff are increasingly engaged in activities outside of the university, often serving the larger public-service role of the university, sometimes with additional compensation. Universities need policies that ensure these university employees are maintaining their commitments in time and service, such as teaching courses and mentoring students. They must also avoid engaging in consulting and research grants in which their financial interests may interfere with normal duties as university employees or with their impartial judgment as researchers. National or regional governments may have general policies related to ethical conduct, but universities need to have their own set of policies and the means to enforce them.

Program Review

Regular reviews of existing academic programs ensure that standards of excellence are maintained and that schools and departments plan strategically for the future. In many parts of the world, academic program review, like post-tenure review, is a relatively new concept. Increasingly, ministries of education are setting up standards and requirements for program review and for various forms of university accreditation. However, the most significant path for

institutional self-improvement and evidence-based management is internal, campus-driven review processes that can offer an honest assessment of the strengths and weakness of a department, like history, or physics, or a college.

Effective Academic program reviews are designed to elicit input from faculty, students, and staff of the department under review. The model at Berkeley, and similar to that at other top public universities, is to perform a review of an academic department, school, or program every eight years or so that includes the following process:

- A Program Review Committee of the Academic Senate coordinates and monitors the review process, with staff support offered by the campus' office of institutional research.
- Each department, school, or program undertakes a self-study, assessing its intellectual agenda, its programmatic goals and resources, and identifies critical challenges and opportunities facing it. The department, or unit, is supported in this effort by data provided by the Office of Planning and Analysis.
- A carefully selected external committee completes a report based on its interviews with faculty, students, and staff and relevant review documents provided by an institutional research office. The academic program being reviewed has the opportunity to respond to the committee's report and to one written by the member of the Senate's Program Review Committee. Subsequently, all review documents are submitted to the Academic Senate for response by the committees and the Executive Vice Chancellor (EVC), the head academic officer at Berkeley.
- Reviews culminate in an outcome letter that delineates action items for units, deans, and central administrators. The dean responsible for the program under review completes the EVC and Senate reports are distributed to units after the review.
- The EVC outcome letter is formally transmitted to the unit, which concludes the review. At this point, all review reports and the outcome letter become part of the public record.
- The unit is expected to take actions to address the findings of the program review. The outcome letter designates the timeline for acting on the recommendations. The unit is expected to report on actions it has taken as part of its annual request for new or replacement faculty positions to the responsible dean unless otherwise negotiated at the wrap-up meeting. The dean is expected to comment on the unit's progress in his/her annual request to gain or retain a faculty position. The institutional research office is responsible for maintaining a database of initiatives undertaken in response to the recommendations.

Diversity of Funding Sources

Most universities seek a greater array of financial sources, moving away from a funding model dependent largely on governments. In part, the diversity of funding sources for research-intensive Flagship Universities reflects the growing diversity of academic and public service activities; but it also often reflects a decline in government investment in leading national universities.

Throughout the twentieth century, for example, the state universities like Berkeley, Michigan, Texas, and North Carolina gained more than half of their operating funds from state governments. Today, declining investment rates and much expanded funding portfolios has meant that state funding is only about 15 percent of the budget for these famous universities. The other major sources of funding include tuition and fees, research grants and contracts, and income from patents and gifts.

While Flagship universities generally are diversifying their funding sources, they must retain their commitment to their regional and/or national socioeconomic role. At the same time, a diversified funding portfolio promises greater funding stability and, in most circumstances, a path to greater institutional autonomy.

Institutional Research Capacity

Institutional research (IR) is an essential activity for Flagship University. Most universities have had very limited formal policies and strategies for gathering institutional data, and for employing trained staff to generate the information and analysis required for competent and innovative management. One catalyst for increasing IR capacity is the growing demand of ministries for data to meet evolving accountability schemes; various international and national ranking efforts are also leading to relatively new campus efforts to generate and maintain databases and formulate strategies for improving citation index scores and similar measures of output.

In many research-intensive universities, however, there remains a significant lack of IR capacity and understanding, by academic leaders and by faculty, of the critical role of IR for institutional self-improvement and quality control. Flagship universities need to focus on their own data and analysis needs, including internal accountability efforts like Program Review, and not simply react to external demands. IR capability generally includes the following co-dependent functions:

- Data development and maintenance on core university activities
- Enrollment, personnel, and financial management

- Outcomes assessment, program review, accreditation
- Institutional reporting and analysis
- Strategic planning

These are interconnected purposes, of course, that link general data collection and management with efforts at strategic planning. But how to effectively pursue them? Figure 3.17 offers a model on how an Institutional Research office at a Flagship University might be organized.[14]

All major universities need a professional IR staff. They also need to seek collaborations with similar regional or national universities, and even international partners, to help build a comparative perspective, and to bolster institutional research as a profession with common standards of data collection, research, and analysis methods.

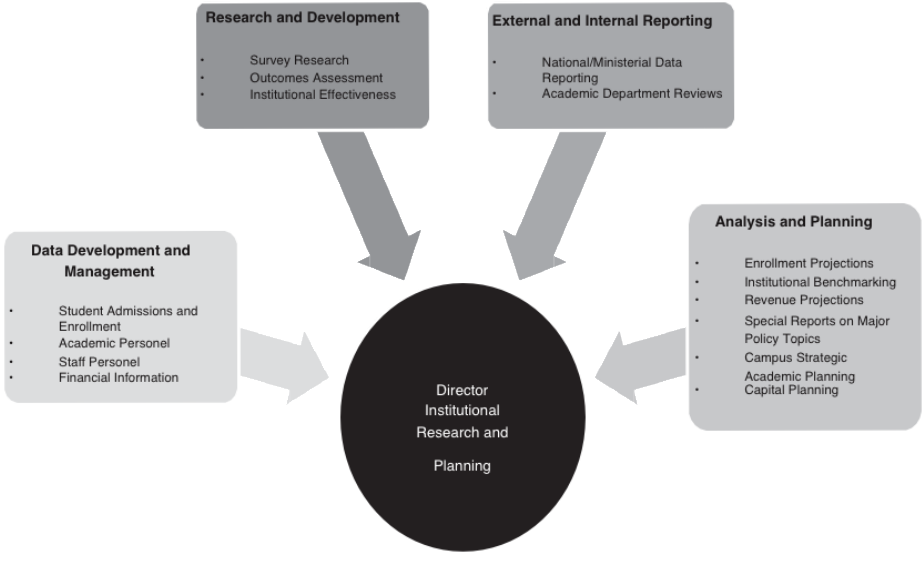
Many universities, sometimes lacking a central campus administration with sufficient authority to direct strategic efforts, simply seek out faculty without adequate training to provide IR. Often these efforts requests are ad-hoc, and do not take into account the breadth of data analysis needs of a campus. Major universities should maintain a divide between faculty responsibilities and those of professional IR staff—although interaction is obviously important and some faculty may want to take on a full-time professional role in IR.

Information is power. It is of course ironic that most universities have extremely limited IR capabilities, partially understandable, as most universities have had a decentralized structure of decision making and, until recently, limited external accountability demands. Organizational models may differ, including the focus of IR efforts that are influenced by the varying demands of ministries.[15] Yet, all campuses need some form of a centralized IR office.

International Cooperation and Consortia

While Flagship universities should have a strong focus on regional and national needs, they must also leverage collaborations with faculty, programs, and, more generally, with universities in other parts of the world. As noted previously, the crucial strategic approach for Flagship Universities is not to see international engagement as an end to itself (or, for that matter WCU rankings), but as a component of their larger missions and pursuits. At the same time, there is significant policy convergence in the activities, and social and economic demands, being made of universities. They can learn much from each other and benefit greatly by exposure to the activities and innovations of peer institutions.[16] Indeed, international cooperation and joint activities can be transformative.[17]

Figure 3.17 Case Example: Organization of an Institutional Research Office by Functions.



Source: Adopted version based on Volkwein, Liu, and Woodell 2012. "The Structure and Functions of Institutional Research Offices," in Howard, Richard D., Gerald W. MacLaughlin, and William E. Knight ed, The Handbook of Institutional Research, San Francisco: Josse-Bass

There are institutions that have various international agreements and programs that are not well focused or carefully planned. The volume of engagements appears to take precedence over the value and costs to the institution—in money, but also in faculty time. High-visibility projects, like a branch campus, take shape without a substantial business plan and without strong faculty support. Sustainability in terms of funding and faculty interest and participation is often a challenge. Most international engagements cost institutions money, despite promises of income generation. This is not to discourage experimentation and risk taking, but to encourage greater introspection and analysis on initiatives.[18]

Figure 3.18 lists the ways Flagship University may pursue international engagement (Edelstein and Douglass, 2012). This includes individual faculty initiatives; the management of institutional demography; mobility initiatives; curricular and pedagogical change; transnational institutional engagements; network building; and campus culture, ethos, and leadership.

The various strategies for internationalization take different levels of institutional effort and resources. Figure 3.19 provides a general mapping of this range of institutional effort. Student and faculty exchanges are common at all leading national universities. Within non-Anglo countries, courses in English are increasingly common in selected fields, and nearly universal in business master's programs. But in many nations, there are legal and cultural difficulties, including the language ability of faculty, that pose challenges to this pathway for internationalization.

Joint courses are also increasingly common in select fields, usually driven by the interests of one or more faculty in a department or program. Joint and double-degree programs are placed as a higher order of institutional effort, conditioned by how they are organized, the ability and willingness of faculty to coordinate with faculty in other institutions, and sometimes the ability of students to physically or virtually navigate course requirements and language differences. Generally, these are degree programs with relatively small enrollments.

Joint research projects and coauthorship in academic journals with international collaborators are growing dramatically—more common than joint courses and, particularly in the sciences, can require significant resources in the form of faculty time and laboratory facilities. Curricular reforms intended to integrate global knowledge and skills into courses and degree programs are placed as a high-effort activity. As many observers of internationalization note, there is often much rhetoric around the concept that campuses are reforming and repositioning their curriculum and academic programs to be more international. Yet there are few strong examples of this happening in a coherent and pervasive manner. Particularly in

Figure 3.18 Clusters and Modes of International Engagement.

Cluster 1—Individual Faculty Initiatives
- Research Collaboration
- Teaching and Curriculum Development
- Academic Program Leadership
- Sanctioning Authority

Cluster 2—Managing Institutional Demography
- International Student Recruitment
- Recruitment of Foreign Academic and Administrative Staff
- Visiting Scholars and Lecturers
- Short Courses, Conferences and Visiting Delegations
- Summer Sessions, Extension Programs and Language Acquisition Programs

Cluster 3—Mobility Initiatives
- Exchange and Mobility Programs
- Study Abroad Programs, Internships, Service Learning, Research Projects and Practicums

Cluster 4—Curricular and Pedagogical Change
- Incremental Curricular Change
- Foreign Language and Culture
- Cross-Cultural Communication and Inter-Cultural Competence
- New Pedagogies and Learning Technologies
- Extra-Curricular and Student Initiated Activities

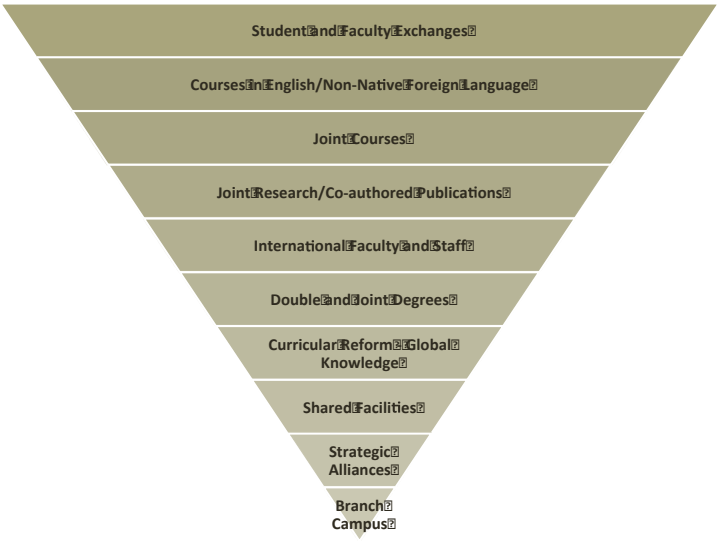
Cluster 5—Transnational Engagements
- Collaboration and Partnerships with Foreign Institutions
- Dual, Double and Joint Degrees
- Multi-site Joint Degrees
- Articulation Agreements, Twinning, Franchising
- Research-Intensive Partnerships
- Strategic Alliances
- Branch Campuses, Satellite Offices and Gateways

Cluster 6—Network Building
- Academic and Scholarly Networks
- Consortia
- Alumni Networks

Cluster 7—Campus Culture, Ethos, and Symbolic Action
- An International Ethos: Changing Campus Culture
- Engaged Leadership

universities that adhere to a three-year bachelor's degree and where students enter a specific field and have few or no opportunities for general education, there are limits placed on developing global knowledge and skills, including education abroad.

Figure 3.19 Mapping of University Internationalization by the Least to Most Amount of Institutional Effort.



There are many purported strategic alliances among universities, either in the form of university-to-university agreements, or in various international associations. But their actual meaning and importance is often minimal. Strategic alliances in this mapping include only major and significant efforts between universities and are very rare. Perhaps the best example is the Singapore-MIT Alliance launched in 1997. Under a formal agreement, MIT and Singapore are engaged in on-going collaborations in research, education, and innovation. The relationship has yielded hundreds of joint research publications and scores of research collaborations.

Shared facilities with international partners are rare, but are a growing phenomenon. The logistics can be significant and, again, may relate to the sustained interest of key faculty and the mobility of researchers, and graduate students.

A branch campus requires the greatest level of campus time and effort and is a growing phenomenon, although with a common pattern. Almost all are small-scale, boutique experiments in a limited set of disciplines with high student demand such as business, engineering, or information systems and computer science. They are more like outposts than genuine university campuses, although with a number of exceptions. Education City

in Qatar, for example, with some ten branch campuses, graduated only 243 students across all fields and institutions in 2011.

Most branch campuses also appear to be only loosely connected to their home campus, with limited impact on its core functions of teaching, learning, scholarship, and scientific research. Because of their small scale, they involve a small set of students and faculty members on the main campus. In most cases, students do not come to the "mother" institution for a period of study and home-campus students do not matriculate at the branch campus (Edelstein and Douglass 2012).

As discussed in the chapters providing case studies of Asia, Russia, Chile, and Scandinavian countries, internationalization has different levels of importance, perceived and real, among different countries. Every Flagship is expanding its international engagement; the question is in what ways and for what purpose (de Rassenfosse and Williams 2015).

Notes

1. I realize that this effort has many biases that reflect the historical development and current mission of some of the great Flagship universities in the United States, and to some degree, my own historical research on the purpose and influence of public universities (Douglass 2000; 2007).
2. I. Bunting, N. Cloete, and F. van Schalkwyk, 2013. *An Empirical Overview of Eight Flagship Universities in Africa: 2001–2011*. Cape Town: Centre for Higher Education Transformation.
3. Andrés Bernasconi 2012. "Are Global Rankings Unfair to Latin American Universities?" *Inside Higher Education*, October 15. www.insidehighered.com/blogs/world-view/are-global-rankings-unfair-latin-american-universities#sthash.XpboINbW.dpbs.
4. SERU-based research tells us that the student experience is nuanced at major research universities—that the classroom is one component of a rich array of experiences that includes the key role of the disciplines in building learning communities, the socioeconomic background and the interaction of students, and their opportunities to engage in research, service learning, and cocurricular activities. These interactions, and the fact that there are many student experiences within each research-intensive university, are thus far not fully captured in the research literature or in the public discourse over the role of these universities in public life. See www.cshe.berkeley.edu/SERU/.
5. Marcelo Knobel, Tania Patricia Simoes, and Carlos Henrique de Brito Cruz 2013. "International Collaborations between Universities: Experiences and Best Practices," *Studies in Higher Education*, 38. no. 3: 405–424.
6. David C. Mowery, Richard R. Nelson, Bhaven N. Sampat, and Arvids A. Zeidonis, *Ivory Tower and University-Industry Technological Transfer before and after the Bayh-Dole Act.* Stanford, CA: Stanford University Press, 2004.

7. These are based on policies developed at the University of California related to both encouraging interaction with the private sector and attempting to define and avoid conflict of interest by faculty or by a department or college.
8. In 1957, Justice Felix Frankfurter set an anchor for academic freedom in the United States., drawingfromlanguageof South Africaneducatorsthenfighting their nation's ban on education of whites and nonwhites in the same university: *"It is the business of a university to provide that atmosphere which is most conducive to speculation, experiment and creation. It is an atmosphere in which there prevail `the four essential freedoms' of a university—to determine for itself on academic grounds who may teach, what may be taught, how it shall be taught, and who may be admitted to study." Sweezy v. New Hampshire* 354 U.S. 234 1957.
9. For a brief history of shared governance at the University of California, see John Aubrey Douglass, "Shared Governance at the University of California," CSHE Research and Occasional Papers, CSHE.1.98 March 1998 www.cshe.berkeley.edu/shared-governance-university-california-historical-review.
10. This is one sample statement drawn from Columbia University, but many similar statements can be found at major research universities.
11. "Hefei Statement on the Ten Characteristics of Contemporary Research Universities" joint statement of the Association of American Universities, Group of Eight, League of European Research Universities, Chinese 9 Universities October 10, 2013: See http://www.leru.org/files/news/Hefei_statement.pdf.
12. Jean-Claude Thoenig and Catherine Paradeise, "Organizational Governance and Production of Academic Quality: Lessons from Two Top U.S. Research Universities," pending publication *Minerva.*
13. This outline of criteria is adopted from the University of California's Academic Personnel Manual APM, section 120.
14. Fredericks J. Volkwein, Ying Liu, and James Woodell 2012. "The Structure and Functions of Institutional Research Offices," in *The Handbook of Institutional Research*, ed. Howard, Richard D., Gerald W. MacLaughlin, and William E. Kight. San Francisco: Josse-Bass. http://books.google.com/books?id=BsbP-cZxLt4C&pg=PT46&lpg=PT46&dq=ASHE+Handbook+Institutional+Research&source=bl&ots=XVwPr_n1co&sig=nD3S7DzFNnu0Mn8HUVgI2MZJwf8&hl=en&sa=X&ei=c2BhVNLIPMKsogSQo4LYDw&ved=0CDgQ6AEwBA#v=onepage&q=ASHE%20Handbook%20Institutional%20Research&f=false.
15. Igor Chirikov, "Research Universities as Knowledge Networks: The Role of Institutional Research, *Studies in Higher Education*, 38, no. 3 (2013): 456–469.
16. John Aubrey Douglass 2009. "Higher Education's New Global Order: How and Why Governments Are Creating Structured Opportunity Markets," CSHE Research and Occasional Papers Series, December: www.cshe.berkeley.edu/publications/publications.php?id=348; also John Aubrey Douglass, "The Race for Human Capital" in *Globalization's Muse: Universities and Higher Education Systems in a Changing World*, ed. J. Douglass, C. J. King and I. Feller. Berkeley: Berkeley Public Policy Press.

17. For a discussion of models for international consortia, see Marc Tadaki and Christopher Tremewan, "Reimagining Internationalization in Higher Education: International Consortia as Transformative Space?" *Studies in Higher Education* 38, no. 3: 367–387.
18. See Richard Edelstein and John Aubrey Douglass, "The Truth about Branch Campuses," with Richard Edelstein, *Chronicle of Higher Education*, February 27, 2012: www.chronicle.com/article/To-Judge-International-Branch/130952/.